8: Waddell & Krinks OJ23 Orokaiva OJ23

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[Specific data on the relative importance of various productive activities in terms of the amount of time spent performing them have been filed in Category 461.]

5: Schwimmer E-4,5 (1966-1967) 1973
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movements were more extravagant and exciting than those of the others; they were allowed, and did, break out of line for extra flourishes that took their fancy while still remaining true to the spirit of each type of dance. A notable feature of the dances is the identification with spirits and animals on the part of the dancers. Mistakes in drumming and dancing are thought very inauspicious for the well-being of the community. Although men and women do not dance as partners, the dances give men a chance to show off their attractions, while the women give signs to men who impress them.

3. *Economics*

Production. The Orokaiva work force involves, in some ways, everybody from the age he can walk almost until the day of death. The very young and the very old are expected to make whatever contribution they are capable of. The division of labour between the sexes has been the subject of enquiry by Williams, Waddell and Krinks. A sex basis in the division of labour is obvious in a great many activities, as the charts clearly show.[7] But even where activities are 'shared' between men and women, it is most common to see each sex group work at a different aspect of the task; they rarely do exactly the same job. Calculations by Waddell and Krinks show that the Orokaiva are fairly fully occupied in terms of the number of weekly working hours. Their calculations suggest that, given the present technology and social organisation, there is comparatively little slack in the working week that could be taken up by cash cropping activities on a major scale.

The working group is most frequently the household, occupied in the *pure*. Sometimes close relatives work together on larger tasks, helping each other in turn. Although old men do maintain their own gardens, they tend to receive frequent help from sons, sons-in-law and sometimes sisters' sons. Co-operation between men is also common during hunting and housebuilding. Co-operative groups of five or more men or women are also seen occasionally, e.g. for making roofing for a house, planting and harvesting yams. Co-operation of a total village is rare, but there are co-operative fishing and hunting expeditions. Activities related to feasting tend to be communal also.

Distribution. The Orokaiva have a subsistence economy where the bulk of goods produced are consumed by the household of the producer. Though patterns of exchange will take up a good part of the present work, it is necessary to state at the outset that only a small percentage of everyday produce enters the exchange system in any way. Waddell estimates that only 4.1 per cent of taro produced in Sivepe is disposed of by sale, gift exchange or barter. While the proportion is twice as high in Inonda, this is due to quite recent changes in the economic network in that area. One is bound to agree with Waddell that food exchanges, whatever their economic utility, are no great drain on Orokaiva resources. Of the produce entering the exchange network only a minute proportion leaves the village where it is grown. At a comparatively large feast I saw in Inonda in 1967, I estimated that Inonda was giving away, at the very utmost, 5 per cent of its annual production. As plantings are always made on a scale sufficient for survival *even if the harvest is poor*, there will be a surplus of at least 5 per cent after a good growing season. Unless the growing season is good,

[TEXT CONTINUED ON PAGE 29]

5: Schwimmer E-4,5 (1966-1967) 1973
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TABLE II/5 (*continued*)

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Activity	*Total hours*	*Percentage contrib.**
Both		*Men*
Paid work	1,128.8	56
Other crops – harvest	1,109.0	54
Sick – personal	442.6	53
Yam – harvest	412.6	53
Coffee – process	398.4	53
Collecting firewood	234.1	52
Social obligations – mourning	783.9	51
Other crops – market	66.9	51
Church services	1,946.2	46
Meetings	898.7	44
Fishing	165.0	44
Council work	824.2	42
Taro – maintain	2,551.6	37

* Where one sex carries out more than two-thirds of the work and where the total amount exceeds .01 per cent (29.0 hours) of the total hours active for the whole sample.

there is a ritual prohibition, for which I shall later quote the mythological charter, to hold a feast at all. 433 437

In any case, there seem to be two basic limitations to the size of a feast. First, the custom of restricting the number of guests to the inhabitants of *one* village, usually of about the same size as the inviting village. There are of course many variations to this custom but the principle of limitation is usually present. Secondly, the generosity shown to the guests, though outwardly most impressive, is restricted by the amount the guests can physically carry away. Though the food lying on the feasting platform looks inexhaustible to the observer, and the guests are capable of carrying away a heroic amount of food after a feast, the overall economic impact is minor. 527 527 574 628

Waddell remarks most interestingly that, in comparison with the main crops (taro, bananas and sugar-cane), a far higher proportion of dry season crops enter the exchange network. This applies especially to sago, breadfruit, sweet potatoes and yams. Waddell does not discuss nuts, but these are often given to friends and function as the small change of sociability. Both *tauga* and *puga* are stored for the season of shortage; betelnut is a traditional trade item. All vegetable produce is nowadays considered suitable for marketing. Villages near Popondetta have far more opportunity to sell or barter produce than the villages on the Mount Lamington foothills. 439 437 438

It is customary for animal food to enter the exchange network, either as a gift or as part of a festive meal to which guests are invited. Meat is ceremonial food, eaten for instance to mark the settlement of a quarrel. It is considered somewhat [261]

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5: Schwimmer E-4,5 (1966-1967) 1973
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439 communities. When these do occur they are usually between neighbouring
437 communities, as Waddell and Krinks have clearly demonstrated.[9] Intertribal
438 trade, though small in volume, was politically important in that it provided a motive for terminating, or at least interrupting, warlike disputes. Intertribal trade
[628] was mainly in animal products, betelnut ingredients, feathers, *hambo*, and certain artifacts which were known to be of high quality in particular districts, e.g. Binandere pots were exchanged for Yega loincloths; only mountain people could supply cassowary feathers, and so on. Such exchanges may, under modern conditions, take the form of gift exchange, barter or sale but it may be doubted whether barter was ever as clearly institutionalised and differentiated from gift exchange among the Orokaiva as is the case in many other parts of Melanesia.

433 *Money.* With a few reservations, one could describe the role of money in
436 the modern Orokaiva economy in much the same terms as Salisbury used for the Siane (1962). Salisbury distinguishes between three nexuses of activity. One is concerned with the production, distribution and consumption of subsistence goods, another with luxury goods and a third with ceremonial goods. The three nexuses involve not only categories of goods but also different types of social
436 groups. Among the Orokaiva as among the Siane, money mainly enters the
454 luxury and ceremonial nexuses. As with the Siane, the Orokaiva tend to store pound notes in treasure boxes, with *di* and *hambo*, and to keep them for special purposes which are often ceremonial (payment of brideprice, giving of feasts and
436 church donations), but sometimes utilitarian (payment of taxes). Purchases in
439 trade stores are mostly for luxury items, i.e. objects which the Orokaiva use only when there are guests to be entertained (tinned meat and fish, sugar, tea,
[262] batteries, cartridges, kerosene and tobacco, for example). Foods like rice, bread and flour are classifiable as luxuries among the hill people, as here they are used exclusively as guest foods. It is clear, however, from Waddell and Krinks' statistics that on the alluvial plains near Popondetta, rice and flour is bought in far greater quantity in months when taro is in short supply. These products are thus taking the place of subsidiary crops. People in this area prefer to make money from cash crops and services and to spend some of their cash on supplementary staples. The Siane, at the time of Salisbury's research, did not depend on cash as a source of staple food.

177 The use of money for capital goods merits some attention. Salisbury defines
436 capital as a stock of goods, present before a productive act is performed, used in production and 'immobilised' from direct consumption while the act is in
439 progress. Tools and implements are classed as 'durable instruments of produc-
511 tion.' Houses and clothing, etc., are called consumer's capital because they 'produce' services for their owners while they exist. It is interesting to compare, in respect of monetary input, everyday consumer goods and the types of capital just mentioned. While the former have generally remained outside the cash economy, it is precisely in the sphere of capital goods that the traditional industries have been largely or wholly replaced by cash-purchased innovations such as trade, store clothing, agricultural, hunting and cooking implements. Totally new items – radios, flashlights, wrist watches, pressure lamps, sewing machines and guitars have been added. Locked suitcases, for the storage of valuables, are very popular, indicating that safe storage used to be a vexing problem.

5: Schwimmer E-4,5 (1966-1967) 1973
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CHAPTER IV

THE EXCHANGE SYSTEM AND THE NEW AGE

1. *Cultural Changes*

177 Many significant changes have occurred in Orokaiva society since European
[241] contact. The introduction of cash cropping has made the Orokaiva, to some
[437] extent, into a peasantry, depending to a limited degree on monetised marketing.
[167] Furthermore, there has been a large amount of labour migration, mostly by male
[433] workers whose families stay behind in villages. Even in the villages, technological
[657] innovations have been influential in raising productivity and improving standards
of living, while sharply reducing the game population. People have become accustomed to the existence of a specialised political authority, wielded by
[797] Australians but supported and assisted by Papuan functionaries. Inter-village and inter-tribal warfare has been effectively suppressed. The Orokaiva give at least nominal allegiance to Christianity, and thus to the principle of obedience to an omnipotent god.

829 These changes have profound implications for Orokaiva political philosophy.
177 As we have seen, the Orokaiva recognised the importance of Hobbes' question:
657 how can a man avoid a perpetual war between all and all? The answer, briefly, was that social order can be created by a system of exchange partnerships. But this was not Hobbes' own answer nor that of the Australians who now rule New Guinea. If the changes pursued by the colonial government are wholly successful, it is clear that exchange partnerships, as the basic source of social order, must become subordinate to legitimate central political authority and the modern market economy. In other words, there is what Gluckman calls a 'contradiction' (1965: 109) between Australian policy and the exchange-oriented Orokaiva social philosophy. It is possible, but cannot be predicted, that this 'contradiction' will eventually lead the Orokaiva to abandon their traditional exchange ideology. In the meantime, however, it is already clear to the Orokaiva that their world view is being seriously challenged by white wealth and power.

436 The effect of pressure on the exchange system is evident in many spheres. In
437 the economic sphere, the Orokaiva still carry on most of their non-monetary
431 transactions by the traditional system, using gift exchange between consanguines, affines and bond friends. Furthermore, gifts of money are being made along traditional lines, money being used either as a substitute for *hambo* and other valuables, or as gifts from urban migrants to country kin. On the other hand, store-bought goods are, by a general convention, excluded from the full operation of the exchange system, only a minority being distributed as gifts. The

Origins of the System (1894 - 1918)

From the beginning of British administration in Papua in 1888, it was policy to encourage Papuans to engage in cash cropping. MacGregor, the first Lieutenant-Governor, advocated cash cropping to those villagers he met in his tours of the country, but such incidental advice by an intinerant official was probably not very influential. The first legislative provision to promote cash cropping was a Native Regulation, introduced by MacGregor in 1894, which provided that magistrates could compel indigenous people to plant coconuts on penalty of a fine.(1) This was extended in 1903 by a regulation which provided for compulsory planting of other economic trees. Native agriculture was not, however, the main plank of agricultural policy for although government staff were trained to "treat natives justly" they were directed "above all to prepare the country for development by Europeans. There is not, and there has not been, any other policy".(2)

Planting under the regulations took place slowly, and only in areas which were under the close supervision of magistrates. It appears that there was little planting of cash crops by Papuans other than under the compulsion of the regulation and at this stage it does not seem to have been a matter of concern to the Administration whether the people planted individually or in groups. It has not been possible to determine which pattern was most frequently followed in practice, though the examples noted in the literature mostly involved planting by village or clan groups rather than by individuals. Coconuts were the main crop planted under the regulations, but rice, rubber, kapok, peanuts and fruit trees were tried in smaller

(1) Native Regulation No. 2, 1894. Miles (1956: 318) regards MacGregor's technique for promoting native agriculture as unusually enlightened, but in fact it seems to have been almost universal in the Pacific at that period, and MacGregor had become familiar with it while serving under Sir Arthur Gordon in Fiji. Similar regulations were introduced by Germany to Samoa and New Guinea, by the United Kingdom to Fiji and the Gilbert Islands, by New Zealand to the Cook Islands and by Holland to Indonesia.

(2) MacGregor to Lamington 4. 10. 1898 (quoted in Healy 1962 : 84).

quantities in some areas.(1)

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After the turn of the century less emphasis was given to the policy of expanding indigenous plantings of cash crops and instead Papuans were persuaded to work as labour on European plantations. In 1906 the Lieutenant-Governor stated that not only was staff inadequate to enforce the 1894 regulation, but that where it was enforced the resultant income attracted traders whom he felt to be a bad influence on the Papuan people. Employment on European plantations, on the other hand, was considered to be beneficial.(2) This policy remained until after the first world war, though some Resident Magistrates also applied the regulations in order to extend native plantings.

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(1) For a more detailed study of the application of these regulations see Miles 1956 : 319-23.

(2) Territory of Papua Annual Report (hereafter abbreviated to P.A.R.) 1905-6 : 9.

group.(1) Group planting seems to have been the general pattern in other parts of the Territory too. In the Western District in particular, the Resident Magistrate initiated schemes for cash crop plantations being owned and operated by each village as a whole. Profits were to be used for projects which would be of benefit to the village community (P.A.R. 1913-14:12). About fifty such plantations were established under the scheme.

During this post-war drive (and probably in 1920) a government officer assembled the people of the nine villages(2) of the northern branch of the Asigi tribe and instructed them to choose a site and plant an area of coconuts for the nine villages as a whole.(3)

A central site was chosen near Ongoho on land belonging to the Akute'undi sub-clan (most of the members of which lived in Ongoho village), and about 500 coconuts were planted as a community project by the men of the nine villages.(4) They were to be used exclusively for copra making (there were ample coconut trees in the villages for domestic use) and work and profits were to be shared equally among the able-bodied men. Small plots of rubber and citrus trees had been established at Ongoho under the same scheme a year or two earlier. The citrus was intended to be used primarily as a latex coagulant for the rubber, and only secondarily as a cash crop.

(1) In some instances in the coastal villages of the Northern District each individual planted his own trees, but all villagers planted in one "village" block on the land of one man or of one descent group.

(2) Ongoho, Hongorata, Ivisusu, Sowai, Weki, Ondahari, Oere, Girigirita and Heherita. Sowai and Weki were later abandoned and today their populations live together at a new village named Sotokoiari. Likewise Girigirita and Heherita have amalgamated and moved to a new site. The new village is called Girigirita.

(3) Data in this section of the report was collected by interview only in the villages concerned during April-May 1963.

(4) The annual reports show that in 1921 there were 518 coconut trees over five years old and 1,287 under five years old in the Asigi area. The nine villages listed above comprise about half of the total Asigi population. The 518 mature trees were probably those planted in the villages. Trees in the community block which did not survive were not replaced, and as the ground has not been cleared since the second world war, many have died. There were 198 trees still standing in 1963.

Production and income

433 241 While official reports give laziness or misunderstanding as the reason for the lack of willing co-operation with the scheme, the reason given today by the people themselves is that the income was inadequate for the effort required.

[435] Table 1 shows the total production of coffee from plantations established under the ordinance in the Orokaiva area for the ten year period 1931-40, and the amounts paid to producers for it. The price per pound has been calculated and ranged from 4.5 pence (in 1932) at the highest to 2.1 pence (in 1938) at the lowest. The average price for the period was 2.6 pence per pound. (1)

433 434 245 [465] Table 2 shows that output per acre of land planted in coffee under the scheme averaged 681 pounds, which is a relatively high yield. At 2.6 pence per pound this would have given an income of £7.7.5 per acre. The total work force on all the plantations is estimated to have been about 700, so payment would have averaged £1.11.0 per worker per year, or less than 2 pence per day worked. The 15½ acres of coffee in the Ongoho block(2) would, assuming average yields, have given an annual income of £114.5.0, or just over £1.0.0 per worker, but informants today maintain that payment at Ongoho was usually 8/- to 12/- per man per year with young lads being paid 5/-. [464] Only on one or two occasions did the payout exceed £1. The total labour force in the nine villages which participated in the Ongoho block was probably close on 100 and yields per acre 465 were apparently lower than average. Enquiries at other communal plantations show that higher prices were paid in places where a smaller labour force was working an equally large [466] area. In Hohota, for example, £6 to £9 was paid per man in some years, but there the hours of work are said to have been 6 a.m. to noon six days a week, plus afternoon work at harvest-

[439] (1) The world trade depression had begun about the time the first coffee was coming into full production. The crop was marketed in Australia where it met strong competition from Java coffee.

(2) Our measurement of the planted area shows it to have been just over 15½ acres, though the area gazetted was only 15 acres.

[TEXT CONTINUED ON PAGE 17]

6: Crocombe E-4,5 (1963) 1964 OJ23 Orokaiva OJ23

Table 1

Production of coffee in the Orokaiva area from plantations established under the Native Plantations Ordinance for ten years 1931 - 40[1]

Year	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	Total	Yearly average
Weight (lbs)	9,630	22,652	67,470	60,645	61,425	123,000	127,000	171,595	187,300	163,319	994,036	99,404
Payout[2]	170	426	828	558	642	1,280	1,425	1,527	1,863	2,102	10,821	1,082
Pence per lb[3]	4.2	4.5	2.9	2.2	2.5	2.5	2.7	2.1	2.4	3.1		2 6

(1) Derived from Territory of Papua reports 1932 - 41.

(2) Net payment to producers in £ Australian.

(3) Calculated to the nearest tenth of a penny.

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Table 2

Output per acre of coffee in the Orokaiva area from plantations established under the Native Plantations Ordinance for five years 1936 - 40[1]

Year	1936	1937	1938	1939	1940	Total	Yearly average
Acreage	189	218	242	242	242		226.6
Total output (lbs)	123,000	127,000	171,595	187,300	163,319	772,214	154,443
Output per acre (lbs)	651	582	709	774	675		681

(1) Derived from Territory of Papua reports 1936 - 41.
Acreages for the years 1931-5 are not available.

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the men who carried the coffee to Higaturu each Saturday were each given a stick of tobacco. By 1950 the basis of payment had been changed and producers were paid immediately and in cash for their produce.

The post-war drive did not last long and when official pressures were relaxed production dropped markedly. During 1949-50 extension staff made a further attempt to revive the scheme: seven plantations in the Higaturu area were fully rehabilitated and similar work was proposed for the plantations east of Popondetta. New processing equipment was purchased and a new coffee factory built at Higaturu, but it was hardly completed when Mt. Lamington erupted early in 1951 destroying the factory and many of the plantations as well. Production from the plantations scheme ceased as a result of the eruption, but it is doubtful whether it would have continued for long in any case. The price was low, (1) no external sanctions were imposed (and the people were not permitted to impose their own sanctions) and in many instances there was dispute over the shares to be given to landowners, supervisors, and others. In 1955 extension staff made a third and final attempt to revive the scheme, but it too met with little long term success.

No precise production figures are available for the plantations scheme in the Northern District, but as this scheme produced most of the coffee exported from Papua, total exports from the colony give an indication of the pattern which applied in the Northern District. These are listed in Table 3 below.

(1) In 1950 coffee was being bought in cherry at 2d per pound which is equal to about 10d per pound for parchment coffee. Data published in P. A. R. 1949-50 : 17 show that 40,160 man-hours were worked on the 56 acres of coffee then in production and that £767. 12. 3 was received from coffee sales. Making no allowance for establishment costs, this represents 4½d per hour worked.

Table 3

Coffee production in Papua 1939-63[1]

1938-39	112	tons	(Of which 84 tons came from Orokaiva native plantations)
1939-40	77	tons	(Marketing and supervision affected by war)
1940-41	69	tons	(Marketing and supervision affected by war)
1941-42	Nil		(Japanese occupation)
1942-43	Nil		(Japanese occupation)
1943-44	1	ton	(Australian military occupation)
1944-45	6	tons	(First attempt to revive scheme)
1945-46	20	tons	(First attempt to revive scheme)
1946-47	21	tons	(First attempt to revive scheme)
1947-48	12	tons	
1948-49	19	tons	
1949-50	24	tons	(Second attempt to revive scheme)
1950-51	13	cwt.	(Owing to Mt. Lamington eruption)
1951-52	½	ton	(Owing to Mt. Lamington eruption)
1952-53	1½	tons	(Owing to Mt. Lamington eruption)
1953-54	2½	tons	
1954-55	4	tons	(Third attempt to revive scheme)
1955-56	5	tons	(Third attempt to revive scheme)
1956-57	11	tons	
1957-58	7	tons	
1958-59	17	tons	(Includes first exports of coffee from individual plots sponsored by agricultural extension on land registered under Higaturu Council land registration scheme)
1959-60	24½	tons	(Including 7 tons from indigenous producers in Northern District)
1960-61	30	tons	(Including 24½ tons from indigenous producers in Northern District)
1961-62	35	tons	(Including 26 tons from indigenous producers in Northern District)
1962-63	49(?)	tons	(Including 41 tons from indigenous producers in Northern District)

(1) These figures had to be derived from a variety of sources, for the Annual Reports for Papua do not include exports made via Lae in New Guinea. They must be taken as approximate only.

After 1958 most of the coffee produced by indigenous growers in the Northern District came from plots which were planted by individuals (largely as a result of agricultural extension services) and registered under the Higaturu Local Government Council land registration scheme. The communal project was formally abandoned in 1960 with the repeal of the Native Plantations Ordinance.(1) Crown lands reverted to the Crown and native lands to their owners. The Government has treated the Crown lands as reserves for the local people and has not taken any action to restrict their use as communal plantations. Today, however, only 9 of the 16 pre-war plantations which we visited are producing at all, and they at only a fraction of their potential output.

We traced the history of the Ongoho community block in detail in a series of separate interviews at each of the villages which had participated in the project.(2) The collapse of the project there was caused by disagreement over land rights, apportionment of work and distribution of income. The disputing parties were the various sub-clans which had participated in the project. The sub-clans may be roughly equated with villages.(3)

Before the war, strict control by the Administration precluded the emergence of these particular problems: the land had been demarcated and the trees planted under close supervision, fixed patterns of work were imposed, and the money was paid to each man by a government official. By the late 1940's however, the sanctions for failure to work were not in fact being exercised, and attendance was irregular. The Ongoho "coffee boss" who had been responsible for local supervision from about 1945 found the dissension too much to control and resigned in 1948. Little work was being done and the govern-

(1) The Native Plantations (Papua) Repeal Ordinance 1960.

(2) This was necessary because the issue is still very contentious and feelings about the disputes over the community gardens are still strong.

(3) In fact each village is regarded as being that of a particular sub-clan, despite the existence of smaller enclaves of other sub-clans in most of them. Marriage is usually (but not exclusively) between sub-clans and almost invariably within the Asigi tribal group.

extension staff left, the internal tensions re-asserted themselves. [245] [578] [654]

The people made an attempt to keep the garden working as the price of coffee was then 3/3 per pound. [435] Persons from several sub-clans participated in harvesting, pulping and drying and a consignment of coffee was taken on foot to Popondetta (a distance of about seventeen miles each way by the paths then in use). [462] For the first time women and children helped with the harvesting. The income from sales was distributed by the coffee boss, but disputes arose over the proportions due to the "landowners" for the use of the land and to the coffee boss for his supervision, as well as the relative shares to be given to those who had done the work, for some had not worked as many days as others. [464] [578] Members of other sub-clans again withdrew from the project. The coffee boss himself and some members of Hoiwo'undi sub-clan occasionally harvested a little coffee to provide money for particular needs, but most of it was left untouched. [433] [434] No further maintenance was done. When the Higaturu Council and its supervising officer, Mr. Normoyle, strongly advocated planting by individuals rather than groups, a number of people took seeds from the community garden and established their own individual coffee plots.

When the Higaturu Council erected a coffee factory in Popondetta late in 1959, councillors were encouraged to maximise coffee production in their areas. The Ongoho councillor (who is a half-brother of the ex-village constable)(1) was able to persuade some people to start harvesting again. On this occasion each family was to be allowed to harvest, process and sell whatever coffee its members picked.(2) People were to be allowed to pick anywhere and at any time. No maintenance was done except on one occasion at the beginning when all people worked together to clear the undergrowth. [578] This system

(1) When the council was formed all village constables were compulsorily retired. [625]

(2) The produce was still taken to Popondetta on foot. The Higaturu Council provided a tractor and trailer to collect coffee from various points along the main Saiho-Popondetta road, but Ongoho was about eight miles from the nearest point. [489] As a flat rate of one penny per pound was charged for the service, the Ongoho people did not use it. They used to leave Ongoho at dusk and carry all night and arrive at the factory early the following morning.

operatives they had given them the key to European prosperity. 461 [197]

Local enthusiasm was strong and a large acreage of rice was grown. However, no marketing facilities had been provided and although the mission had promoted the crop mainly to supplement traditional subsistence foods, most Orokaiva seem to have regarded it as a cash crop. They already had a plentiful range and volume of subsistence foods, and rice was not only harder to grow but also more difficult to prepare than the existing crops. Most of the rice grown was neither sold nor eaten, but was left to rot in the storehouses. 243 433

It is interesting to note that at Ongoho, despite the unfortunate experience with other community crops, all inhabitants of the same nine villages came together to plant a single rice plot. The project was organized by Haruma, the coffee boss, and the rice was planted on the land of the Akute'undi sub-clan. The crop was planted in 1949, and the rice was stored in a house built for the purpose. None of the rice was sold, a little was used for food, but most was left to rot. The experiment was not repeated. When asked why everyone combined to grow the rice instead of growing it individually, the people claimed that they had not realized at that time that cash crops could be grown by individuals. This view may seem incredible to a European, but we have heard it quoted in many parts of the Orokaiva area. Their whole experience of cash cropping had been of large scale enterprises, whether private European plantations, government plantations (which were established adjacent to many district headquarters), compulsory plantings under the regulations, or communal plantations under the ordinance. The introduction in 1955-6 of the concept of cash cropping by individuals was in a very real sense revolutionary.(1)

The idea of community economic activity was again given a boost in 1949 when war damage compensation was paid out. A small proportion was paid in cash, but most was deposited in savings bank accounts. Many government officers then in the area noted that the money was being used to buy 434 454 474

(1) It must be pointed out, however, that among the Orokaiva food gardening had always been undertaken by individuals. [241]

Conclusions

423 24 All the attempts to promote communal cash cropping among the Orokaiva have been economic failures. There is no evidence to suggest that they have been successful in any non-economic sense. Each of the ventures has been associated with problems of land tenure, work organization, income distribution and motivation. We will deal with each of these problems in turn.

423 [614] Problems of land tenure: When a sub-clan or other descent group has set aside land for use by a larger body which includes other descent groups, the donor descent group is recognized in terms of traditional culture as having residual rights to the land. These rights may still be recognized by the community even if they have been abolished by legal action in terms of administrative procedures (see pages 10 and 25).(1) This is particularly so in cases where the setting aside has been the result of a degree of persuasion which appears to the people as compulsion. Strict government supervision can protect the legal rights but, if none of the parties are particularly anxious to have them protected, the supervision needs to be constant and [461] strict to be effective. Even then the results are unlikely to justify the effort required to effect the controls, for supervision by force results in very high overhead costs and seldom motivates workers to maximise output.

241 614 [592] We do not know of any instance of communal planting of cash crops by a single descent group on the land of that descent group. Traditionally all planting was organized at the level of the primary household, with some reciprocal assistance from other households for specific tasks at irregular intervals. If a single descent group did undertake clearing, planting and harvesting of cash crops jointly, tenure problems would be un-

(1) A similar phenomenon was observed in the Ambenob scheme near Madang where the Administration purchased land from the villagers and leased it to the Local Government Council for sub-lease to individual farmers for cash cropping. The purpose of the scheme was to give security of tenure to the individual, but as both vendors and sub-lessees recognized some degree of residual right as remaining with the vendors, a sense of security has not been achieved. This is one reason why sub-lessees are in fact planting their cash crops more on their traditional lands than on their sub-leases.

A. [See Category 423, pp. 10, 25--Analyst]

241 65 [466] [625] [177] As Mair (1948 : 85) has noted, the fact that officials could fall back on compulsion gave them no encouragement to considering any alternative approach. The European officer's link with the people was through the village constable, and from what the Orokaiva tell us this line of communication operated in one direction only, for most constables felt that it was improper to query instructions given by Europeans, or to make suggestions to them. Not only was no attempt made to create local institutions which could have carried responsibility for community projects, but the imposed organizational structure did not provide the people with an acceptable model on which to fashion any new local institution. The vesting of all powers of sanction in the central government, moreover, forestalled the possibility of their spontaneous emergence.

465 212 Problems of income distribution: While the Administration paid each individual separately, no overt problem arose, but when government ceased buying and the coffee was sold to a trading company a lump sum was given to the person or persons who brought it in, usually the local coffee boss. Relatively few Orokaiva were literate (among the Asigi there were none) though it may have been possible to have made equal payments to all persons. However, as the community was unable to enforce equal work this was not feasible. Had there been a sufficient standard of literacy it may have been possible to operate on co-operative rather than communal lines (i. e. making payment in terms of work contributed) but in fact few people had the necessary degree of literacy and almost none had any knowledge of book-keeping.

461 [466] [433] Problems of motivation: The Orokaiva were never willing participants in any of the communal schemes (with the exception of rice growing in 1949). Some of them may have begun some of the projects willingly, but continued operation was only achieved by force. The money incentive was quite inadequate: most of the schemes produced no income at all, and those that did gave less (in cash and kind) than employment elsewhere. As already noted in the section on work organization, there was no social incentive to continued production.

241 It has been suggested that the pre-war community projects were merited in that they introduced the people to the

agricultural techniques of cash cropping and to regular patterns of work. It is true that most of the individual plantings of coffee since 1956 were made with seeds taken from the old community blocks where the techniques of coffee husbandry had been learned, but it was there also that the people had acquired their distaste for cash cropping.

The fact that all attempts at developing communal cash cropping among the Orokaiva have failed does not necessarily mean that communal planting is never practicable. What it does indicate however, is that to be successful, communal farming like any other farming system, must be coupled with appropriate organizational structures, sanctions and incentives as well as with extension, processing and marketing facilities.(1)

(1) Individual small-holdings do not of themselves lead to higher output. Since 1956, the nine Asigi villages which participated in the Ongoho community block have been encouraged to plant individual cash crop gardens. To date only 33 gardens have been planted (all of coffee). They cover only about 9 acres of land and contain 4,209 trees. Most are little better tended than the community block and fifteen are completely abandoned. Low price, distance to the market and lack of extension services seem to be responsible.

433 The C.S.I.R.O. (1954:12) reported that a wide range of annual and perennial crops which will grow at altitudes up to approximately 1,500 ft and do not require a marked dry season could be grown successfully. The report commented that the whole land system is a very good agricultural area and that this is reflected in the relatively dense population,

> a factor which under the present system of native agriculture will influence the extension of European agriculture. The potentialities of the area, however, far exceed the present land use, which means there is scope in this area for the successful application of extension work directed to the improvement of native agriculture and horticulture.

137 The natural vegetation of the area is a rainforest climax (Pometia pinnata-chisocheton sp. Alliance), of which very little remains. A belt of primary and secondary rainforest separates the settlements on the mountain slopes from their northern neighbours but the area south of this belt is mostly covered with more recent secondary growth in various stages of regeneration after cultivation. Isolated patches of 'kunai' grass occur (mainly Saccharum spontaneium, with some Ropbelia, Imperata spp.)[1] but their area is insignificant by comparison with the grasslands found on the Orokaiva plains.

b. The cultivation cycle

132 Over a period of 8 years the average monthly rainfall has ranged from 9.6, 7.9 and 8.2 inches in June, July and August (when rain falls about 15 days per month) to 20.9, 16.8 and 17 inches in December, January and February (with 22 wet days per month). The coefficient of seasonal variation used by Brookfield and Brown (1963:20) indicates only slight seasonal variability in the area.[2] An occasional brief drought is possible at any time, but with good soil, and no marked dry season, conditions for the growth of subsistence crops are usually favourable throughout the year and new gardens can be made as needed.[3]

[241]

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[1] District Agricultural Officer: personal communication.

[2] The coefficient of seasonal variation was 0.30. This measure is obtained by calculating from rainfall figures the standard deviation of monthly means from the mean of the monthly means and then dividing the standard deviation by the mean of the monthly means.

[3] We found no effects in this area of the rainshadow zone referred to by Keesing, 1951:6.

241 There is, however, a slight seasonal variation in the rate of agricultural activity. There is no correlation between the various phases of gardening activity and the seasonal variations in weather conditions, such as is sometimes found among shifting cultivators,[1] but the anticipated climate may determine the extent of new cultivation carried out at a particular time. More new gardens are made about the start of the season of heavier rains than at any other specific time of the year (cf. Williams 1930:144).

Decisions as to the type of garden work to be undertaken in the immediate future take account of suitability of current weather conditions. For instance, most villagers took the opportunity offered by a long unseasonal dry spell during the last weeks of our survey, at the time which would normally have been the height of the wet season, to make extensive clearings for new gardens to ensure a more continuous supply of food.

The natural high fertility of the ash-agglomerate slopes of the volcano is maintained under the system of short-fallow shifting agriculture. Gardens are small, scattered and irregular in shape. Usually each area is worked with varying intensity for only 18 months. General seasonal conditions do not closely define this period. There is minimal rotation of crops; only single plantings of taro are made and this crop covers over 90 per cent of areas under cultivation.

[433] Crops mature quickly but weed infestation and leaching result in a more rapid decline in yields under cropping than is found in highland areas. After one crop, pests and diseases become established and reduce the yields of any further immediate plantings. It is therefore essential to rely more on extending new clearings than on the intensive use of a few elaborately prepared garden areas.

The decision to cultivate a new area and the choice of a site rests with each household. Once a garden site is chosen, the secondary growth is cleared by the members of the household, using axes and bushknives. The undergrowth is cut first; trees are then felled at shoulder level and the stumps are left to provide support for yams and sugar. The branches are removed from the felled trees and the trunks are used later for fences, garden boundary marks, building materials or firewood. Undergrowth is left to dry for about a week and then burnt. Once this is done, edible pitpit (Saccharum edule) and bananas are planted at random over the cleared area. Sugar is planted near the tree stumps so that it may be tied up to prevent lodging. It is thus less susceptibe to

[1] Conklin 1954; Lawrence 1955:5; Vicary 1960:182.

249 stood untouched for about 20 years. In 1944 Humphries (1944:4)
657 reported that 'the trees grew to maturity with very litte attention from the natives and today they are being tapped for the first time'.

[434] In 1941 an agreement under the Transactions with Natives Ordinance (1893-1935) was made between a European planter recently arrived in the area and the villages with rubber stands, whereby he obtained exclusive rights to tap, collect and dispose of the produce of all the trees, while from 6 per cent to 12 per cent (according to ruling market prices) of the gross sum obtained by the lessee was to be paid to the owners every 6 months; in general this meant that the owners received 1 penny to 3 pence per pound. The contract was to extend for 5 years and the lessee was to have the option of renewing it for a further period of 5 years.

The arrangement became effective in 1941 but was interrupted by the Japanese invasion of the Northern District. In 1943 A.N.G.A.U.[1] authorized the lessee to return to restart production from the trees. Mann (1954:35) says that

> during 1944, under the supervision of the rubber division of the Production Control Board, tapping of some 250 acres
● [433] of those smallholdings was organized. During 1945 production was over one hundred thousand pounds dry rubber, indicating average yields of about four hundred pounds per acre.

249 Various estimates have been made over the last 20 years as to
433 the size and number of the rubber stands in the area. Mann's
311 figure of 250 acres contrasts with the lessee's estimate of 110 acres,[2] and with Humphries' assessment of about 80 acres. There were 95 stands with a total of 7,721 trees listed in the 1941 agreement but during 1943-5 a further 42 stands were added so that most of the available stands were then included in the scheme.[3] In 1951 Belshaw claimed that there were roughly 6,000 rubber trees in the 'Periho' tribal area within what was formerly the Kokoda District and another estimate about the same time put the number of trees in this wider area at 10,000. The annual report of 1959 stated that 26,000 trees 'in the Awala area' were tappable. A

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1 The Australian New Guinea Administrative Unit.

2 Assuming this estimate and the figure of over 100,000 pounds for 1945 production to be accurate, we must conclude that the average yields were more than twice those given by Mann.

3 It was reported by patrol staff that 'nearly all' the rubber stands were being worked from Awala in August-September 1943.

recent agricultural census listed 55 stands with 13,700 trees in the Saiho Census Division (which coincides roughly with the 'Periho' area) and another 3,700 trees in the Sangara Census Division. However, according to the 1964 census there were 14 Saiho villages with stands, carrying 10,000 rubber trees altogether, 4,500 of them less than 6 years old and another 3,500 less than 10 years old.[1] There were also 46 individually-held plots recorded with 8,000 trees, all less than 10 years old. The total number of rubber trees on village-stands in the Saiho, Sangara, and Togahau Census Division was put at almost 26,000.

The agreement between the lessee and the villagers was modified in 2 ways after the war. When the scheme was resumed in 1943 the Administration decided that in order to facilitate the handling of money, the royalty to be paid to the owners should be changed from a percentage basis to a flat rate of a shilling twice a year per tree tapped;[2] and the royalties set aside every 12 months by the lessee were sometimes withheld by the District Office so that the people did not receive payment for more than 18 months, although the contract provided for half-yearly payments.

Until 1946 local villagers were employed by the lessee to tap their stands. A tapper would work in his own area but his task necessarily included some stands belonging to nearby villages other than his own. This caused some misunderstanding at first but the owner's suspicions were eventually allayed.

The Village Constables had been responsible for seeing that the magistrate's instructions were obeyed when the plantations were established but apparently the Village Councillor in some cases assumed control over the distribution of the income among the 'owners', who were listed in 1 schedule of the agreement, although the money was shared under the supervision of a government official. One man recalled that 1 delayed payment of £114 was made for rubber from a number of stands owned by members of his village; he claims that the money was shared by more men than those named in the agreement drawn up several years before.

The lessee believes that the stage at which contract arrangements were conducted to the best effect and greatest satisfaction of the villagers was the period 1943-6 when he arranged to employ some of them as paid tappers.[3]

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[1] These would include self-sown trees.

[2] There is no evidence to support Belshaw's assertion (1951:13) that the owners were at one time receiving a royalty of only 6 pence per tree.

[3] In September 1943 government officers reported that there was a good daily yield as the trees were in good condition.

249 177 A new marketing scheme was devised after 1946. Any villagers who wished to tap their stands were provided with a tapping gouge and spout, anti-coagulate, treeseal and latex bucket by the same European planter. The tapper brought latex to the factory, was [434] given a receipt and paid at the end of the week according to the weight of the dry rubber of the latex brought in. This system brought about a decline in tapping standards resulting in lower net cash returns for the villagers and seems to have been part of the background to their lack of enthusiasm for the lease noted by patrol staff in 1948.

433 249 In mid-1949 a report from the Popondetta District Office stated that all privately owned rubber areas were on the verge of closing down; production costs were high and market prices had fallen considerably.[1] The advent of the 'price-boom' later, caused by the Korean war, coincided with the eruption of Mt Lamington and the evacuation of the villages, and consequent cessation of production.

[435] By 1954 when attempts to organize systematic production were again resumed the market price had dropped to 5/6 d. per pound; the planter proposed to issue daily chits for latex bought and to pay cash at the end of every week. He offered the villagers, and the Administration agreed to, a price of a shilling per pound dry rubber content for all grades of rubber accepted. A system was organized whereby he provided for the transportation of latex by road from collecting points.[2] He arranged for the tapping of alternate 'sections' every 4 to 5 weeks; the time interval was dependent upon the density of the latex offered. Kongohambo was the collecting point for one 'section' consisting of stands between Kendata and Binduta; Koropata was the collecting point for another section. Only 70 villages were still supplying latex, mainly because of the accessibility. A report on native agriculture in January 1956 noted that villagers had sold 3,600 lb. (dry weight) of rubber for £180 in the previous 6 months. This was produced from only 10 stands 'near Avala' and it was felt that [435] other existing stands would probably not be brought into production until roads were improved. By July 1958 the number of stands had not increased but 6,000 lb. (dry weight) of rubber was produced and sold for £300 in 3 months.

In 1958 the villagers ceased to sell latex and started producing coagulum because the planter ceased to provide transport: the

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[1] The report seems inaccurate where it says that the fall in price led the lessee to terminate production. In fact production continued.

[2] Some villagers are under the impression that the price they were paid for their latex was lower when it was collected by the planter.

433 replacement of his vehicle being necessary but uneconomic. By
249 1958 independent production from his own plantation was increasing
[464] and, despite periodic renewal of enthusiasm for rubber,[1] the number of village tapping stands had dwindled,[2] due partly, in the planter's view, to the movement of increasing numbers of able men from their villages to take paid employment. Already, in 1955, it had been noted that in the areas near Awala and Sangara there was a serious shortage of manpower for work in the villages due to the absence of men employed as wage-earners.

In 1958 the people still interested in tapping adopted the planter's plan that, instead of selling latex at 1 shilling per pound dry weight of rubber as before, they should coagulate their latex themselves and carry it to the factory for sale at 6 pence per pound of coagulum. However if members of a distant village had a lot of coagulum for sale, they might still ask the planter to send a vehicle to collect it without charge.

[435] Bi-annual 'reports on native agriculture' put production from village stands for the year ending 30 June 1959 at 7,000 lb. (dry weight) and the price at 1 shilling per pound. In November of the
[464] same year it was estimated that rubber was produced from about 50 acres of village stands. By December another 2,750 lb. had been produced and the European planter suggested that declining production was due to the attraction of labour to the new Sangara
[245] European plantations and to heavy demands on villagers' time made by Administration departments and the mission. Coffee and cocoa planting was said to be increasing at the expense of interest in tapping rubber. In the first 6 months of 1960, however, 4,700 lb. (dry weight) was produced; by mid-1964 interest had increased further[3] and coagulum with an estimated dry rubber content of
[435] 1,500 lb. per year was being produced. In 1962 the price offered by the planter for coagulum had fallen from 6 pence to 5½ pence per pound.

249 It is not clear whether the individuals who offered themselves as tappers after 1946 had been conceded this or any other right by the rest of the villagers. Responsibility for distributing

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[1] In the first 6 months of 1955 production from 7 plots of rubber 'in the Sasembata area' rose by 60 per cent to 8,000 lb. dry weight (DS-29-835).

[2] The planter puts the number of villages involved at this time at about 30. The number participating at present is still about the same.

[3] Interest was aroused by the Ombisusu rubber project at this time (see p.102).

249 centre may be overtapped. No attempt is made to extend the area under rubber or to replace existing trees. Self-sown seedlings are allowed to struggle under heavy shading of parent trees and surrounding bush. Crowding leads to an accumulation of trash which presents a disease hazard.

A meeting of the local council recently adopted the proposal of a European planter that he should supply labour to clean the village rubber stands in the area in return for the scrap rubber collected in the process but the villages concerned refused to assent to the agreement.

In order to produce the coagulum the Sivepe tappers pour latex into hollowed-out sections of logs on the site of the stand and leave it to undergo natural coagulation but some other villages coagulate latex in the buckets they had received from the European [435] planter. The blocks obtained in this way are washed in the river before being sold at the factory 3 miles away. Villagers claimed that coagulum produced from the Pusahambo stand in approximately 12 months before our survey was sold for £35, an average of £5.16.8 for each of the 6 tappers.[1] This figure was checked 433 against records of receipts issued and indicates a yearly yield from the 2.4 acre stand at Pusahambo of 320-40 lb. per acre, despite the age of the stand and condition of the tapping panels.[2]

This compares with the Territory average of 400 lb. per acre which is the same as the estimated yield for the village rubber when the trees were worked for the first time and the tapping standard was good. Neighbouring European planters achieve yields of up to 800 lb. per acre with similar clonal lines and expect 2,000 lb. per acre from newly-introduced high-yielding trees. The first yields from a nearby Orokaiva smallholder's scheme in 1964 indicated a maximum yield of 500 lb. per acre with the old clonal lines.

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[1] In 1964 Department of Agriculture staff reported that 1 month's tapping by a villager selling coagulum to the European might return £2 or £3, and that the tappers thought this amount too small.

[2] An officer of the Department of Agriculture who inspected the area in 1962 suggested that most of the trees being tapped were self-sown.

Chapter 5

The land and economic development

a. Shifting cultivation and residential stability

Under the present system of horticulture the amount of land surplus to current subsistence needs is small and imposes limits to expansion of commercial agriculture.

Williams (1928:154) regards the system of subsistence cultivation as wasteful because it requires such a large area per person. However, the practice of shifting gardens frequently and for short periods on scattered plots does give maximum yields and maintains soil fertility. Brookfield and Brown (1963:166) point out that no successful alternative to land rotation has yet been proven for subsistence agriculture in the tropics. Population pressure and soil fertility are not sufficiently serious problems on the slopes of Mt Lamington to warrant the measures which Fisk (1962) recommends in other circumstances.

Keesing (see Chapter 3, Section e) argued that the rotation of land adversely affected social stability. But the settlement pattern which developed after the emergency shows that there is no necessary connection between dispersed settlement and either the local population density or the method of bush fallow rotation. Some very large villages formed after the eruption (e.g., Soroputa and Kiorota) retained large groups of immigrants who owned no gardening lands near at hand. The present high rate of mobility between other villages, most of which are much larger than before, is not closely correlated with the shifting of garden sites. Among the Chimbu, by contrast, land use is more intensive, but frequent shifts of residence between scattered hamlets are related mainly to gardening needs.

With the introduction of cash cropping the Chimbu pattern of settlement is becoming more permanent (Brookfield and Brown 1963:98). There is little significant evidence either to support or oppose our belief that the planting of individual coffee plots since the mid-1950s has not been associated with a drop in

179 more active collaboration with local groups and leaders' (ibid:172).
423 The report discusses the Land Tenure (Conversion) Ordinance, which became law in 1964, noting (ibid:171) that the legislation requires that the Administration satisfy the preliminary conditions of 'complete inquiry about customary rights and agreement of all the holders of customary rights' before it can conduct the surveys and convert these rights to individual registered title free from any customary limitations.

The experience of the Native Lands Commission in surveying land and recording customary rights 'indicates that progress in the application of this legislation will almost certainly be slow' - too slow, the mission believes, for much progress to be made in implementing its recommendations for economic development (ibid.).

It recommends 'a more flexible approach' to the obstacles to change, posed by the traditional social matrix of land customs. The Administration could well 'encourage native groups to work out their own solution to obtaining individual ownership or control of the land within native customs. The local government councils could make a useful contribution to this difficult problem.'

c. Economic incentives

433 Mann (1954) concluded his report on the area by stating that the agricultural possibilities of rubber were very good but that

> it seems little short of a tragedy that the well-intentioned efforts to introduce it as a native culture in this area have come so close to complete failure, whilst the trees remain as a source of discouragement to further development of what may prove to be a worthwhile venture for the landowners of the district.

657 The policy of establishing rubber stands under the Native
433 Regulation was well-intentioned but, as Humphries points out (1944:4), it was implemented by a single overworked man. The people of the district may well have questioned the point of having 'useful trees' when the initial forced plantings were not followed up with the provision of extension, processing or marketing facilities. Although they eventually received a small income for little effort when a local planter put this idle capital to some use, there have never been facilities designed specifically for local needs.

Belshaw maintained that even while receiving this income the people were unhappy with the scheme, not simply because they judged the price they received unjust, but because they felt it was 'wrong that somebody else should be able to exploit their own resources' (1951:14). Moreover, they resented the withholding of payments and this has left lasting impressions.

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433 From the villagers' viewpoint Europeans who participated in establishing and exploiting their rubber, and other external agencies, have alternately assumed complete control of the enterprise - if it could legitimately be regarded as a continuous attempt to realize their assets' potential - or have adopted a laissez-faire attitude towards village production.

To help meet current demand A.N.G.A.U. encouraged resumption of the project after the war but the planter claims that 'in spite of repeated representations Administration has given no support, moral or otherwise', to the various schemes; although he sought to determine the villagers' preferences where alternatives offered themselves, it was inevitable, as things stood, that the people generally had very few opportunities to decide what form the scheme should take. They could merely be invited to express their preferences on random points about the implementation of a policy determined by others; they could also decide whether to participate or not, at the times a market could be offered.

When responsibility for specific tasks needed to be left with them as one scheme after another evolved, it was delegated inconsistently, left to chance or, at best, left to ad hoc decisions with the result that no clear and consistent definition was given to the respective rights and powers of Village Constables, Councillors, tappers and owners - either those initially listed on the agreement or the wider group said by informants later to have exercised these rights.

The fluctuations in the form of marketing schemes also engendered doubts as to the justification of the methods of determining the price or royalty they received. Uncertainties were not resolved by the lacunae in the scheme which some or all of the villagers were abruptly faced with at one time or another.

651 The people who planted coffee in 1956-7 had hoped that the income from the new crop would exceed their shares of the small revenue from rubber and could be depended on to provide enough for their annual tax paid to the newly established local government council. However, the income from the village plot would have been too low to provide this for everyone who participated in planting the coffee, if they had all been allowed to share in the money.

433 Whatever the cause of their unrealistic expectations, their disappointment and their bitterness over an alleged inconsistency in the payments made to different people or on different occasions for similar quantities of produce of uniform quality have been obstacles to the expansion of the present areas under coffee and to the introduction of cocoa as a second new cash crop. Growers express the view that, because their efforts with coffee have been

433 so misguided, they have no reason to expect different results if they plant cocoa as advised by agricultural extension staff. A point of interest here is the fact that although various people volunteered this view on independent occasions, it has never been the policy of the District Agricultural Office to advocate cocoa planting in the Saiho (Sivepe) area, but neighbouring planters have also observed that this is the view expressed among neighbouring villagers.

[434] [438] [245] The areas of the gardens in which coffee was tried were too small to give satisfying returns.[1] The income of £11 earned by the sample by weeding, processing and marketing their coffee in 1962 compares unfavourably with the £13 received from the year's sales of betel nut which grows well in the area, requires no maintenance and finds a ready market at any time among travellers on the main road.

[435] It is said that enthusiasm for establishing coffee gardens was at a peak when the Administration paid 2 shillings per pound of parchment and has abated considerably since: a factor of central importance in the history of individual cash-cropping here and elsewhere among the Orokaiva is the fall of the price for parchment coffee - by more than 50 per cent since the Sivepe trees were planted.

The size of the decrease aside, it quickly became apparent to us that because the people have only a limited knowledge of the processing and marketing of coffee once the product has left their hands and no knowledge of the process of price fixation, fluctuations in price seem quite arbitrary. A general fall is seen as another instance of the inconsistent treatment they have come to expect as producers and their response is negative. The withdrawal of interest in extensive coffee production due to the uncertainty of rewards is reported to be common in most villages in this area. [245] However, while 725 people in the Saiho area experimented with coffee, only 19 people, in 8 villages, have as yet decided to plant cocoa.[2] Economists estimate that the price of each major type of cash crop currently in production in the area can be expected to fall by about another 30 per cent on the world market in the next 5 years.

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1 The average of 187 trees per grower in the Saiho Census Division (according to rough estimates available in 1963) is not significantly greater than the sample's 126 per grower at the time of our survey. The 1964 agriculture census, which contains much more reliable data, gives the Saiho average as 232 trees per grower and the present average for Sivepe as a whole as 220 trees per grower.

2 Figures from 1964 census, District Agricultural Office.

#433 The people's experience of commercial agriculture has been so confusing and the returns to be derived so problematical that we are not prepared to say that, assuming the continuation of present marketing conditions, any member of Sivepe firmly believes that cash crops would still warrant extensive investment of his time and capital. However, it is evident that they have assessed the prospects of coffee, cocoa and rubber in turn and are inclined to believe that, of the 3, rubber is the crop most likely to produce worthwhile rewards for any labour they may devote to cash crops. [249] The first individual plantings of rubber at Sivepe and neighbouring villages have taken place recently. In the past few years 1 householder in our sample has planted nearly 100 trees near Nahihita. He is employed as a rubber tapper on a nearby plantation. Another has 1 acre of cleared land intended for rubber.[1] The seedlings are taken from the low-yielding lines in the village stands. There is land available to give some scope to extension of the present areas under rubber which could be sold through the existing outlet.

However, these production increases will be limited by the fact that villagers have to be content with low-yielding seedlings while high-yielding lines are now being introduced on to local European plantations and the Department of Agriculture Nursery and by the knowledge that, quite apart from the variability in the returns for their present efforts to produce rubber, with coagulum they are limited to manufacturing a consistently low-priced product. They can make comparisons in discussions with local people employed on neighbouring plantations processing quality sheet-rubber and in many cases they themselves have had first hand experience on rubber estates (see Table 10).

It is reported from various sources that the villagers to date have failed to find satisfaction in the organization of rubber production and in 1964 many were considering a plan to establish a rubber growers' co-operative on the lines of the Orokaiva Coffee Growers' Society, proposing to build a large factory of their own to meet the demands of the area now served by the European planter's factory.

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[1] Since our departure, this area has reverted to bush. Another area was cleared by the village for cash crops and it too was overgrown. Apart from various misunderstandings which again seem to have been the cause of abortive enterprise (E. Waddell: personal communication), this may indicate, among other things, that there is currently a strongly ambivalent attitude towards rubber production which requires resolution before a programme can be carried through.

A,[See Category 464, p. 82--Analyst]

794 not necessarily leaders in the old authority structure but often
177 people with particular experience of white rule (e.g., policemen).[1]
178 Both cults were suppressed by the Administration although the Taro cult persisted until 1928 and possibly reappeared in the Gona-Buna area in 1941 (Worsley 1957:124), concurrent with rumours of imminent Japanese landings.

178 The ending of inter-tribal skirmishing, which directly affected
657 the social roles of the sexes, also extended the physical range of
36 interactions open to individuals and resulted in the proliferation
[721] of hamlet groups, comprising single clan-branches, i.e. a fragmentation of the main villages. Administrative efforts in this period were directed towards countering this latter process and concentrating settlements along the roads to facilitate supervision, encouraging improved building styles (particularly the erection of houses on stilts above the ground) and establishing more ordered 'line' villages built around a central square.

(b) Commencement of cash cropping

241 From its beginnings the mainstay of government policy was the
[657] encouragement of indigenous cash cropping. Regulations introduced in 1894 and 1903 provided for compulsory plantings of economic trees, particularly coconuts, rubber and citrus, but few were exploited commercially. Under the Native Plantations Ordinance 1918 and the Native Plantations Ordinances 1925-52, twenty-six community plantations were established in the Orokaiva area with both government and villagers participating.[2] Cocoa, coffee, oil palm, cotton,
[466] tobacco and rice were all tried; however, owing to a fall in prices,
[434] all but coffee were abandoned. According to Crocombe (1964:16), there was no enthusiasm among the people for the scheme as they considered the cash returns inadequate: each man was required to work sixty full days per year and returns varied from less than $1 to $8 per year, which was well below the returns from working on European plantations at that time. Some 10,000 trees, predominantly coconut, were planted in 1914-15 in the Orokaiva area and by 1921 it was estimated that there were 46,404 coconut trees in the Northern
[433] Division and some 7,000 rubber trees (mostly in the Awala area). The planting of coffee commenced in 1923 and by 1936 there were

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[1] Such a development may well also have been characterised by the building up of more extensive group solidarities. Burridge (1960:25) does suggest, however, that the Taro cult may have been a particular expression of a similar type of cult occurring in the pre-contact era.

[2] Proceeds deriving from the sale of the crops were shared on a 50-50 basis. For a detailed treatment of these communal plantings see Crocombe 1964.

242 acres[1] which yielded 84 tons of hulled coffee in 1938-39. Some 1,000 cocoa trees were also planted in the pre-war period, although only the copra and coffee were worked during this time. All commercial agriculture ceased with the Japanese invasion in the second world war and was again interrupted by the eruption of Mt Lamington in 1951. The principle of compulsion was withdrawn in the same year and community enterprise largely ceased in the mid 1950s with an increasing trend towards individual plantings. The whole scheme was characterised not only by low returns to labour, delays in payment,[2] frequent disputed claims to plantings and serious problems in work organisation, but also by a definite feeling of resentment on the part of the indigenous participants.

(c) War and natural disaster

The Orokaiva view of the government was no doubt influenced by the second world war, which led to the Japanese occupation of the Northern District from July 1942 to January 1943, and by the eruption of Mt Lamington in January 1951, causing the death of over 4,000 people and the destruction of the district headquarters and staff at Higaturu.

The impact of the Japanese invasion and subsequent Allied readvance has never been assessed but must be considered profound. All Australian administration ceased and, when resumed, was vested in the Australian New Guinea Administrative Unit (ANGAU), a military authority. Several thousand men co-opted as carriers by both Australians and Japanese worked under very arduous conditions.[3] Since the Orokaiva lay athwart the main Buna-Kokoda route which was the scene of fierce fighting, many villagers retreated into the surrounding hills where they were obliged to subsist on very limited resources because of the absence of much of the potential labour force.[4] Others sided with the Japanese or profited by the power vacuum to attack or betray Allied troops and civilians or to assert their authority over other Orokaiva. On resumption of Australian rule, twenty-two men were sentenced for such deeds by a military tribunal and publicly hanged at Sangara and Higaturu.[5]

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[1] An estimated 111,000 trees at a spacing of 10 by 10 feet.

[2] As much as three years lapsing between delivery and payment (see DDA, DS-17-4-5).

[3] For details of terms for the conscription and of conditions, see McCarthy 1959:116, 132.

[4] A 1948 report refers to a rapidly decreasing population on the northern slopes of Mt Lamington and attributes it in part to the war when many died from malnutrition while hiding in the bush (Higaturu 29-8-33).

[5] A European informant stated that 'several thousand Orokaiva' witnessed the execution, the women 'wailing and mutilating themselves'.

454 considerable interest was shown, more than $14,000 being subscribed by the Orokaiva in the first six months of operation. However, it appeared during 1964 that this company might experience the same pattern of high initial interest and subsequent disenchantment, accentuated by the failure to pay a dividend at the end of the first year of operation.

439 Cocoa is purchased by both DASF and the Popondetta Cocoa Fermentary Ltd, a company financed entirely by European capital. Plans were being made in 1964 for the ex-servicemen settlers, both indigenous and expatriate, to establish their own fermentary.

366 [438] Weekly markets at Popondetta and Saiho provide outlets for subsistence produce but turnover is small and it is doubtful whether they contribute significantly to many individual incomes.[1] The principal buyer at Saiho is the Public Health Department and at Popoddetta, the urban indigenous wage labour force, but in both markets the volume of transactions between subsistence-oriented villagers (primarily involving lime, smoked fish, areca nuts and fresh meat) is increasing.

435 46 [433] The Administration and the Anglican mission buy fresh foods brought to their stations. Since purchase prices were fixed by the Administration at 2c and the mission at 1c per 1b,[2] and only a limited quantity is required, there is little incentive for the villager to increase production.

[241] In spite of an increasing commitment to cash cropping, rates of planting and levels of production fluctuate with changing prices and difficulties in selling certain crops. The purchase price for coffee has ranged between 9c and 32c per 1b over the period 1955-65 while that for latex has fallen from a peak of 55c per 1b during the Korean War boom to 9c per 1b in 1965. A Citrus Marketing Scheme elicited much local interest in 1956-57 when fruit was purchased at 5c per 1b, but it collapsed with the unwillingness of retailers in Port Moresby to handle the produce.

241 [464] (f) Conclusions

In spite of long participation in cash cropping, Orokaiva involvement is not high. Everywhere commercial production remains subsidiary to subsistence, individual cash crop holdings are almost

[434] [437]

[1] Dakeyne 1965:109; Rimoldi 1966:8. Both show, however, that a few individuals earn worthwhile sums from marketing.

[2] Bartered at this rate in salt, tobacco, razor blades and kerosene.

241 universally small and there is no evidence to suggest that any
[464] village producers are employing labour to increase production.[1]

454 Monetary investment at the village level is low and there are
no motor vehicles owned by individuals or groups of subsistence
493 villagers,[2] although a number of villages now possess copra driers
and coffee pulping machines.
407

The foregoing data suggest three main factors, largely unique to the sub-district, which may explain this situation.

464 (i) Labour shortages. Since pacification there have been repeated references to a high proportion of the adult male labour force being absent from their villages. Humphries (1923:203) refers to the Kumusi district being a 'famous recruiting-ground for plantation labourers' at the time of the first world war. Patrol reports after the second world war make periodic references to shortages of manpower in the villages and suggest that the regulation maximum of 30 per cent absent was at times exceeded (e.g. Higaturu 1-1543/44). The establishment of plantations under the ex-servicemen's credit scheme attracted much local labour at a time when returns from wage
[461] labour were considerably higher than those from cash cropping. Many Orokaiva still prefer wage labour to commercial agriculture as a source of cash.

731 (ii) Consequences of the disasters. The effects of the war and
•433 the volcanic eruption served to accentuate the instability of settlement and fragmentation of groups. Resettlement after the eruption took several years in some cases and is likely to have deterred interest in planting commercial trees, at least in the directly affected area, which was the most densely settled part of the Orokaiva region. The findings quoted earlier[3] suggest that the initial Orokaiva adaption to the volcanic disaster was more active

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[1] Since our survey, one Inonda man has taken a job as a driver in Popondetta and employs a labourer at $3 per week to maintain his food gardens. For a description of four Orokaiva entrepreneurs with large holdings of cash crops see Crocombe 1967.

[439] [2] With the single exception of the indigenous ex-servicemen settlers,
[464] several of whom own vehicles; imported foodstuffs comprise a signif-
[465] icant element of their diet and considerable use is made of outside labour, commonly kinsmen. Payment, however, is often nominal or in kind.

[3] See p.16. A

A,[See Category 731, p.16--Analyst]

than might have been expected.[1] However, the withdrawal of the relief teams, including agricultural officers, after the emergency, may have left the people in a psychologically and technologically deprived state, thus further inhibiting their concern with commerce.

The instability of settlement consequent upon these disturbances may also have impeded the evolution of such new forms of leadership and effective group action as have occurred among the Tolai.[2] The careers of such new leaders as were emerging, perhaps with wider group loyalties, have frequently ended catastrophically at important points.[3]

(iii) Lack of co-ordination between the Anglican mission and the Administration. Keesing (1952:21-2) refers to the 'delicate' matter of 'Government versus Mission responsibilities' and alludes to the 'rivalry' between them in connection with the post-Lamington rehabilitation programme.[4] These two agencies are the most potent external forces operating on Orokaiva society and their activities and demands are not co-ordinated, thus accentuating the difficulties of implementing a consistent development policy. Their demands on the villagers' time may conflict, and their views on such important matters as the purpose of education, the role of the teacher and the role of commerce are at variance. The Anglican mission has no formal representation at the policy-making levels in the District though it has great influence in the villages.

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[1] Sjoberg, an authority on disaster research, states (1962:363): 'A typical adaption [to disaster in pre-literate societies] is resignation to one's fate. When catastrophe is thought to be engendered primarily by spiritual forces, man can himself do little to alter the course of events apart from recourse to religious and/or magical practices. Recall that he assumes the immutability of the natural-divine order, which includes also the social arrangements about him. Add to this the meagerness of technological know-how of the sort that would be useful in disaster rehabilitation and we see that mute acceptance of one's lot is the logical result.'

[2] See Salisbury 1962:338.

[3] For instance, the 'renegade' leaders hanged at Higaturu and Sangara; the administrative staff, teachers and the twenty priests-in-training who died at Higaturu in the Mt Lamington eruption, and the Orokaiva leader of the co-operative movement who also died at that time. Many of the most talented Orokaiva are serving outside the region in government, missions and commerce.

[4] Belshaw (1951:248) makes a similar allusion.

Chapter 3

The village economy

433 [128] This chapter describes briefly the Orokaiva pattern of production and distribution, with particular reference to Sivepe and Inonda.[1] Traditionally the villager operated within quite narrowly circumscribed physical limits. Each community functioned largely as an independent subsistence unit, almost all the requirements of [251] life being produced through shifting agriculture and the subsidiary pursuits of fishing, hunting and foraging on its own land. Production was directed almost entirely to immediate and direct consumption, [438] none of the staple foodstuffs except yams lending themselves to storage; exchange was confined largely to kindred within the community or in closely neighbouring communities. Beyond this, minor and informal trade links had developed between some of the inland and coastal peoples, but the degree of inter-dependence established can be considered insignificant.

[436] The contemporary economy comprises both subsistence and monetary sectors, with the former dominating. Most money traffic is with the non-agricultural sector of the national economy and there is little movement of money between subsistence units.

241 (a) The subsistence sector

(i) Production. The pattern of subsistence production is, as yet, little modified by cash cropping, in spite of the latter being based on permanent tree crops which involve substantially different agricultural practices.

Gardens are made in secondary growth where the forest has regenerated over a fallow period of about ten years. Little primary forest survives among the Mt Lamington Orokaiva and, even where it [361] does, secondary growth is preferred for gardening as it is easier to clear. In addition to the shifts in garden locations, many [184] settlements also change sites at frequent intervals, the cycle appearing to be a little longer than the cultivation cycle. All

[1] More detailed descriptions are given in Crocombe and Hogbin 1963:7-13, Dakeyne 1965:54-92 and Rimoldi 1966:13-28.

433 [184] settlements have access to garden land, hunting and foraging areas and creeks but there are considerable variations in availability of these resources, and others such as fish and potting clay. These variations are expressed in the relative significance of the different elements in the work and exchange patterns of different communities.

592 Within the community, the household is the principal economic unit, aiming at self-sufficiency in terms of procuring food, shelter, clothing and production equipment.[1] Thus, gardens are the responsibility of individual households, and the work group for any activity, including clearing and harvesting, seldom exceeds its adult members. [438] Each household produces its own digging-sticks, spears, building materials, sleeping-mats, etc., but axes, bush knives, cooking utensils [476] and clothing are usually obtained from trade stores. For most phases of production co-operation between households is of little importance.

241 A household may maintain between one and five gardens, three being the mean. These average 0.3 acres in size and are generally between five and twenty-five minutes' walk from the village. In some areas, including Inonda and the Yega area, it has recently become popular to plant kitchen gardens adjacent to the houses, often containing manioc, sweet potato, cucurbits, pineapple and even taro. Banana, coconut, breadfruit and 'hingi' (betel pepper) trees are often planted at random around the periphery of the village and in the village square.

The process of garden preparation has been described in the articles cited above.[2] When all but the largest trees have been felled, most of the debris is burned and the remainder piled around the tree stumps. There is no preparation of the soil and crops are planted with the aid of a digging-stick. Gardens are weeded regularly in the early stages, but less frequently as they approach [417] maturity. In the less densely settled areas where wild pigs are [136] common, such as Inonda, most gardens need to be fenced; when separate households have contiguous gardens they usually fence them simultaneously and help each other in this more often than in any other garden task.

[262] The staple food plant of the Orokaiva is taro (Colocasia) and comparatively small areas are planted with the subsidiary root crops of sweet potato, yams, 'German' taro (Xanthosoma) and manioc. Interplanted with the ground crops are large herbs and trees, such as

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[1] Exceptions occur in the case of the elderly or infirm, who are often supported by an offspring's household, and so frequently live in a house adjacent to one or more of them (see Map 4).

[2] See p.23.

A,[See Category 102, p. 38--Analyst]

438 [437] consisted in the barter of shells, lime and wooden and clay pots from the coast in return for areca and feathers from inland. Clay pots, shells and feathers are now rarely traded and the coastal people hawk their produce, mainly smoked fish and lime, around the villages and at the markets for cash.

433 All the people's subsistence needs may be produced within the village or by kinsmen or friends in other, essentially similar, villages. The exchange system serves both as a form of group security, in that the aged or infirm or people with gardens temporarily out of production can rely on kinsmen or friends for support, and a means of exercising authority, through the manipulation of the flow of goods and services. Strictly speaking, however, there is no necessary dependence on the production or distribution decisions made by others. In the case of cash and storebought goods, the reverse applies. These originate outside the village economy and in most cases outside the country. Whereas, given the limits of time, resources and convention, a villager may produce as much of any garden or forest item as he desires, he cannot affect the quantities of cash or store goods available, or the rate (through wage and price levels) at which they may be obtained.

(b) The cash sector

434 [443] The main sources of cash for Orokaiva villagers are the sale of cultivated produce, the sale of labour and remittances from kin in employment elsewhere. Since 1959, an additional source has been the ownership and operation of small stores, but so far only about twenty-five men (including some indigenes from other districts) have turned to trading. The relative significance of each source varies greatly from household to household within a village and within the sub-district. All occur irregularly and are highly unpredictable in the level of returns.

241 (i) Cash cropping. The cash crops of coffee, cocoa, rubber and coconuts occur in either individually-owned or communal holdings, the former under one of a number of land tenure systems, including customary tenure, the Higaturu Land Registration Scheme and the Land (Tenure Conversion) Ordinance. Individual holdings tend to be small, frequently less than 0.5 acres in size and containing less [571] than 250 trees. The communal holdings are larger, often exceeding ten acres, but, in some cases, they are not worked because of disputes over rights to trees and land. In other cases, they are operated by individuals on a rota system. Plantings are rarely weeded or trees pruned. This applies particularly to the communal holdings, where individuals do not accept responsibility for maintenance. In the older rubber and coconut plantings many of the [433] trees are self-sown. As well as lacking maintenance, in most cases

holdings of commercial trees are not fully, and sometimes not at all, exploited by the owners.[1]

Most have been established on land cleared for the purpose and are seldom interplanted with subsistence crops. However, a 'catch crop' of taro, sweet potato or corn may be taken from the newly cleared land before planting coffee or cocoa and it is only now becoming common to plant commercial trees in subsistence gardens after the food crops have been harvested.[2]

The techniques of cultivating and processing cash crops within the village are simple. Coffee is sold in parchment form. In most cases the cherries are pulped by stamping in a creek to split them open, and then the beans are removed by hand and washed. Some villages possess pulping machines. After fermenting for about twenty-four hours in wooden containers, the beans are washed again and sun-dried. A few people erect drying platforms but most simply spread the beans on sleeping-mats in the village square. The buying agency rejects parchment that has not been adequately dried but no price differentials are applied. The coffee season extends from about March to October and people may begin weeding some weeks beforehand. OCCS announces the season's coffee price (as determined by world market conditions) some weeks before buying commences, but few producers learn it in advance and, since they need to begin harvesting a month or two before the time of sale, the element of uncertainty may deter them from maintenance and harvesting even in years of high prices. All coffee is purchased by the society, which is sometimes prevented from buying by lack of funds, lack of transport, or by the poor state of the roads. Buyers may visit only once a month or less.[3] There is scope for an immediate quadrupling of production from existing trees,[4] and more active campaigns and perhaps additional buyers might help achieve this.

Cocoa, like coffee, is maintained, if at all, by occasional clearing of grass and weeds from around the trees. Harvesting is carried out immediately before sale - if possible, on the same day.

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[1] The coffee trees in Popondetta sub-district in 1963 should have yielded about 200 tons of polished coffee, but the actual level of output was only 41 tons (DASF, Popondetta, File 1-6-A(4)).

[2] This practice was followed by indigenous smallholders in Malaysia and Indonesia for two decades and resulted in the planting of millions of acres of rubber by the 1930s. See, for instance, Thomas 1965:101.

[3] In marked contrast to the more densely populated and more accessible parts of the highlands where competition among buyers is keen and some routes are visited daily.

[4] See footnote 1 on this page.

245 Pods are opened under the trees and the wet beans sold to the Popondetta Cocoa Fermentary Ltd, whose buyers operate along all roads in the cocoa areas between the coast and the Kumusi River. Where it would be uneconomic for the company to buy cocoa, as among the Aiga north of the Kumusi, DASF is the buying agent. Cocoa trees produce throughout the year but sales fall off during the wet season.

249 Rubber is sold as coagulum to a local planter who provides spouts, buckets and tools for incising the bark. A halved coconut shell is commonly used for receiving the latex. Two or three hours after the tree has been tapped, the latex is transferred to wooden boxes, hollowed logs or buckets and allowed to coagulate naturally. Until the inception of the Ombisusu rubber smallholders' factory in mid-May 1964, village rubber production in the Saiho area was restricted to a radius of five miles around the only buying agency at Awala, due to the necessity of carrying the rubber on foot to the factory. Rubber trees produce throughout most of the year, although there is a 'wintering' period of three months from August to October.

245 Copra can be sun-dried but most producers build a drying shed either of local materials or of corrugated iron left after the second world war. A shed may belong to an individual or a group and the drying system also may be individual or co-operative. Several hundred nuts are needed to make copra production worthwhile.[1] The nuts are halved and the fleshy interiors placed on a rack above a low fire kept almost smoke-free by using dry wood or discarded shells. After about a week, the copra is dry enough to be bagged and sold at one of the co-operative buying agencies at Killerton, [435] Buna and Oro Bay on the coast. The price is determined by the Copra Marketing Board and varies slightly with quality.

438 (ii) Marketing. In addition to the long-distance trading of
[443] subsistence produce by coastal people, the inland people are also beginning to trade meat (pig, wallaby, etc.), smoked fish, areca, lime and locally grown tobacco for cash with other villagers, either by hawking or in the markets held regularly at Popondetta and Saiho.[2] Vegetables also are sold in the markets. At Popondetta a considerable variety of fresh vegetables, fruits and meat is bought by both indigenous and expatriate residents. Most vegetables

[433] [1] At Inonda there is an average of fifteen coconut trees per household producing an estimated 450 nuts per household per year. Assuming that a household uses one nut daily for cooking or drinking, this leaves less than 100 nuts per household for copra.

[2] See Dakeyne 1965:102-9, for a description of Popondetta market. Although sales of pigmeat in particular to villagers are increasing, the practice is deplored by the older people who have little or no cash in hand.

592 The average size of households[1] is 4.5 persons, otherwise expressed as 2.4 labour units.[2] Of the fifteen households in the sample at the beginning of the survey, only four had individual [249] holdings of cash crops and one man started a holding during the survey (coffee in all cases). Everybody had rights of access to a communal rubber plantation which was tapped by individuals on a rota system.

464 Most household heads have worked for wages as unskilled or semi-skilled labour (plantation workers, rubber tappers, domestic servants and labourers for the Australasian Petroleum Company). 871 The highest level of education reached by any householder was standard II.[3] Standard IV is the highest level attained within the sample (including children), although one absentee completed standard VI at a government school at Kokoda.

622 Although the sample includes the local government councillor for Sivepe and the adjoining villages of Binduta and Awala, he only recently arrived in the village and exerts limited authority.[4] [241] The village as a whole possesses no universally accepted spokesman or leader[5] and the repeated failure of communal ventures[6] may be related to this fact.

Economic holdings

433 Within the subsistence sector, a key factor in the pattern of exchanges is the fluctuating resources of particular foodstuffs in production at a given time in a given household: when an individual has no producing taro he is dependent on others, when he has excess he distributes. Significantly, at the time of the survey of

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[594] [1] For the purposes of this survey, a household is a group of people gardening, cooking, eating and budgeting together. It is basically the nuclear family, perhaps including unmarried kin or widowed or divorced parents (although these may operate as independent households). The household invariably resides under a single roof. Cases of two households living together occur and their frequency in Inonda helps explain the larger mean size of house.

[128] [2] Labour units were calculated on the following basis:

Age	5-9 years	10-14	15-19	20-44	45+
Male	0.1	0.3	0.8	1.0	0.8
Female	0.2	0.4	0.7	0.8	0.6

[3] See Appendix 1.1 [4] See Rimoldi 1966:55-6.

[554] [5] One man, adopted into Timumu clan, is asserting himself increasingly through his generosity, organising ability and industriousness.

[6] See pp.44-5 and Rimoldi 1966:84, 107-8.

A, [See Category 871, p. 307--Analyst]

433 subsistence holdings in Sivepe, three individuals had no producing staple foods in their gardens.

592 Three of the fifteen households surveyed comprise only a single member. Two of these were a married couple who were considered, for the purposes of the survey, as separate households on the grounds that the wife lived for only short periods with her husband, dividing most of her time between her brother's and her father's houses instead.[1] The husband and the third individual, an old man, lived in their own houses, although the former abandoned his on departure from the village in August. One widowed woman and her children had no house of their own but shared those of primary kin until the end of March when she left to marry a man in another village. A second family left at about the same time, in search of wage employment. Thus, by November 1964, the number of households had fallen to twelve while for most purposes the separated woman (household 8) had become a member of her parent's household (14).

All the identified households cultivated separate gardens. For most of the survey period, two households had attached to them the wives and children[2] of two men at work outside the District. Both household heads, in establishing a garden, set aside a portion for the sole use and responsibility of these women, as they were expected to contribute to the household's food requirements.

(a) Food gardens

24 [125] A detailed survey was made of the holdings of seven households, selected to provide a cross-section of the community in terms of status of head, structure of household and involvement in cash cropping. These data were then compared with that collected by Rimoldi almost two years previously (see Tables 4:1 and 4:2). While the small size of the samples, 11 and 7 households respectively, makes it dangerous to draw conclusions, a few observations can be made.

Table 4:1 reveals a fall of 44 per cent in the average size of holdings planted with taro (Colocasia) and sweet potato. In 1964, the maximum sizes of taro and sweet potato areas were much lower than in 1963. This is offset, however, by very substantial increases to three and nine times (respectively) in the average plantings of yams and Xanthosoma. The holdings of two young household heads were responsible for almost all of these increases.[3]

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[1] i.e. effectively there were only 14 households, as recorded in Appendix 1.

[2] In one case, the daughter of the household head and her son, and in the other, the man's wife and her son.

[3] One has established a yam garden of 0.16 acres and the other a Xanthosoma garden of 0.15 acres.

8: Waddell & Krinks E-4,5 (1964-1965) 1968 OJ23 Orokaiva OJ23

121 subsistence societies those activities which provide the mechanism for exchange are generally excluded since it is assumed that the exchanges are of little economic significance. As will be demonstrated such an assumption is of doubtful validity.

In societies where labour is not specialised and subsistence production dominates, the social and economic threads are closely interwoven. All actions may be considered economic in that they are concerned with the 'maximisation of satisfactions',[1] while the close association of the networks of kin with processes of production, distribution and consumption precludes the drawing of a clear distinction between work and leisure. While the term productive is a useful parameter as applied particularly to material life and in contrasting the nature of the involvement in the subsistence and external sectors of the economy, it comprises only part of the total economy. Production and labour in traditional societies must be considered as an integral part of this broader system, perhaps following Conklin (1957:152) who stresses that Hanunóo 'mixed swidden farming...constitutes a pattern for living rather than only a means of making a living or a source of food or cash income'.

There is a complexity of motives underlying the various activities and to suggest that work is oriented simply towards obtaining material goods and achieving subsistence is to grossly misrepresent the situation. 'The pleasure of craftsmanship, the feeling of emulation, the desire for public approval, the sense of duty towards the community, and the wish to conform to custom and tradition, all these and more find outcome in economic action.' (Firth 1959:175.) The point is not simply one of theoretical significance[2] but is of considerable relevance to a consideration of the development potential in these communities, and it is with this in mind that attention here is directed to the whole range of village activities.

179 433 The IBRD report on 'The Economic Development of Papua and New Guinea' considers efforts should be directed primarily to the exploitation of the two major resources of land and labour, and states (1965:40) that

[464] The mobilization of unskilled indigenous labour for development should not be difficult; the manpower potential is large and there is evidence that many more workers could be recruited for wage employment than are now at work.

121 464 The thesis that a potential surplus of labour is concealed within the New Guinea subsistence economy has been developed by Fisk. While the data which follows vindicates his main argument, two

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[1] See Burling 1962.

[2] For a detailed discussion of this see Steiner 1957.

assumptions on which the thesis is based warrant discussion at this stage. These are, one, that in the 'pure subsistence unit'

> What they produce is either consumed by themselves or goes to waste. Saving is limited to the storage of such necessities as can be stored as a reserve against a rainy day, a poor harvest or sickness, and to occasional preparation for increased consumption in feasts and ceremonial. Beyond that there is no incentive to save, or to produce at a level beyond their normal immediate consumption. The level of production is therefore subject to a very definite ceiling, which may be well below their potential capacity to produce, in that when they have produced sufficient of what they know how to produce to meet their immediate needs, there is no point in producing more. The production of a surplus beyond that requirement adds nothing to their satisfactions, present or future. (Fisk 1962:463)

and, two, that 'economic and ceremonial activity are distinct and separate':

> Ceremonial activity and the preparations therefor we shall treat in the category of leisure activity, and as affecting economic activity only to the extent that certain amounts of leisure activity are socially regarded as necessary, and that the amounts of labour available for economic activities are socially limited thereby. (Fisk 1962:464)

Power and prestige in New Guinea are dependent largely upon the control of goods and services. There is, ideally, no limit to the number of wives, pigs and gardens a man may have, and the more he has the greater the productive capacity of his particular subsistence unit. As his level of production increases, that part which is distributed as opposed to consumed increases disproportionately, and so the range and degree to which others are indebted to him increases. Not only does this serve to elevate his status but it provides him with considerable security in times of stress and when making further investments. Insofar as the distributive system itself is concerned, ceremonial activities (although emphasised in the anthropological literature) may be less significant and time-consuming than informal gift-giving; although the principle of reciprocation is at the basis of both, specific goods and services do have exchange values so that they do not necessarily operate on a like-for-like basis. Thus the pattern tends towards a powerful (wealthy) individual distributing goods (foodstuffs) and being reciprocated with services (labour). This has the effect of increasing his capacity to produce and so further elevating his status. Political, social and economic behaviour are therefore inextricably connected and 'leisure' activities cannot be considered apart from the economic system. An example from the Orokaiva will serve to demonstrate the point.

556 [25] [24] [43] [43] An important status indicator is the size of an individual's yam holding. Yams both enter into ceremonial exchanges and are stored for consumption during the dry season when garden foods are in short supply. Compared with taro, work on yams is 'hard' and not everybody grows them. In harvesting the owner seeks assistance from others and the services so rendered are normally reciprocated in the form of gifts of yams rather than the subsequent rendering of an equivalent labour service. The more assistance an individual can solicit the greater his potential capacity to increase his yam holding and so increase his standing in the community while meeting some of the needs of those without yams. In such a case there is no limit to the individual level of production although there is in demand of the group as a whole. However, there is no evidence to suggest this demand is met since annually people must resort to the production of less favoured foods such as sago to satisfy requirements. This suggests that the customarily defined span of activities may be so great as to leave the people without the capacity to satisfy their demand for yams, although the exchange system functioning through the network of ceremonial and leisure activities does permit the more even distribution of scarce resources among the group and provide its individual members with a higher degree of security than they would otherwise have.

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121 Disregarding the merits of Fisk's hypothesis as applied to pristine subsistence communities, virtually all are now elements in much broader political, economic and religious systems. This is directly reflected in work patterns where novel demands are made on the people's time and the level of out-migration by adult males leaves a heavier work load for those remaining behind. As the linkages with the external sector become more effective so these features, which may be largely unrelated to the increasing commercialisation of the economy, become more significant. On these grounds Salisbury's thesis (1962) that the change from a stone to steel technology has resulted in a considerable saving of labour time in certain axe-using activities cannot usefully be presented as additional evidence for the availability of labour for commercial activities.

A final reason for making a comprehensive study of activity patterns is to test the assumption that the particular nature of organisation in subsistence agriculture is well suited to the grafting on of commercial activities. In considering tillage, animal husbandry and construction in traditional societies Udy (1960:85) states:

> None of these processes ordinarily requires the individual attention of members of the production organization. It is perfectly possible to cultivate a field, tend a herd, or build a house, and be carrying on some other activity during the same period. In fact, in tillage and animal husbandry there are limits beyond which more exclusive attention to the process

8: Waddell & Krinks E-4,5 (1964-1965) 1968 OJ23 Orokaiva OJ23

164 man-hours were absorbed by clinic visits and related public health [404] activities. So, grouping all three categories together, sickness [734] accounts for almost 7 per cent of potential activity time.

In analysing the 212.4 man-days spent inactive, Fig.6:1 indicates that 26 per cent fell during two weeks in period I when an influenza epidemic swept the area. It is during the latter part of the wet season that sickness reaches its most serious proportions, accounting for 7 per cent of potential activity time. Malaria, being endemic, is the most common cause along with other parasitic diseases of a debilitating nature; hence the seasonal pattern.

Table 6:3

Sivepe: incidence of sickness according to sex, age and cash cropping status

	Sex		Age				Cash cropping status	
	M	F	15-24	25-34	35-44	45+	Yes	No
Percentage of days sick to total survey days	5.1	4.2	2.3	2.0	1.5	8.3	1.8	8.8

Table 6:3 shows that the older people suffer most and also that non-cash croppers spend a significantly higher proportion of their [162] time sick than cash croppers. While this is largely because the heads of non-cash cropping households are, on average, older than the others[1] it may well be that the non-cash croppers, lacking the initiative of the others, more readily assume the sick role.

512 Temporary absences apart, 4,990 man-days were spent in Sivepe, and during this time the villagers' activities occupied 28,975 hours, or 5.8 hours per man-day. Furthermore, virtually all these activities, except hunting, certain social activities and, occasionally, house construction, were confined to the daylight hours.

Patterns of activity and seasonal influences

512 The adult residents of Sivepe are active, on average, 40.6 hours 433 per man-week, although, as Fig.6:2 demonstrates, there is a sub- 241 stantial variation from week to week. The actual range during the observed period was 34.4 to 51.3 man-hours.

[1] Of the 11 households resident throughout the survey the heads of the non-cash cropping ones are all in the 45+ age bracket while only 2 of the 7 cash cropping ones are.

512 433 241 Such weekly variations can, in part, be correlated with rainfall (see Fig.6:5), less work being done in wet weather as virtually all Orokaiva activities are pursued out of doors; even cooking, weather permitting, is done in front of rather than inside the house. However, while the labour requirements of certain activities vary little from week to week, others are restricted to particular parts of the year or are in response to specific events, and it is these extraordinary activities which commonly account for the weekly variations in activity time.

(a) The subsistence sector

(i) Food production. Subsistence activities predominate, accounting for 30 of the 40.6 hours expended per man-week (see Table 6:4), and within these gardening is the most important single category involving 13.2 hours with bush clearing another 3.7 hours per man-week. Nine hours of the gardening time are spent on the cultivation of the staple food crop, taro.

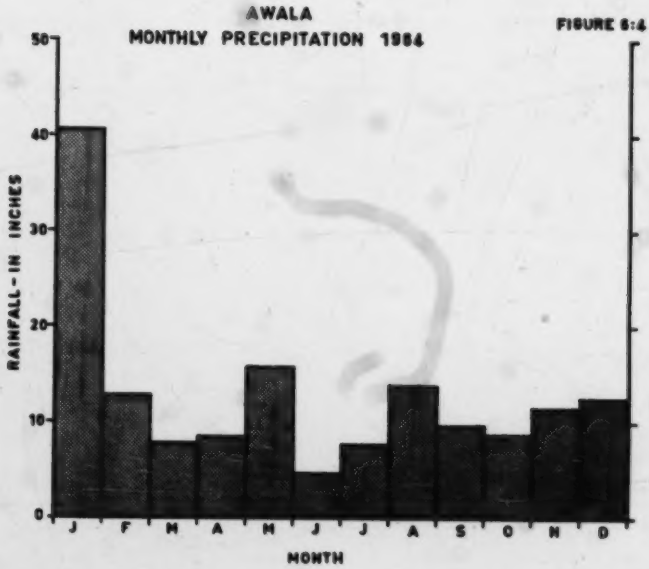
[461] [262] [251] Although the data provide little evidence for any relationship between the pattern of gardening activities and climatic seasonality, this may be accounted for by the absence of a distinct 'dry' during 1964 (see Fig.6:4). The Sivepe people speak of the dry season as, traditionally, a 'time of famine' and intensification of work when their taro gardens are not producing and they are obliged to resort to wild yams and breadfruit for sustenance, together with the cultivated yams harvested and stored during the preceding wet season. While acknowledging that this has been substantially modified with the introduction of Xanthosoma and sweet potatoes, and the increasingly common practice of sago extraction, the fact that August 1964 proved to be a wetter month than December in Sivepe[1] results in a less well defined seasonal pattern being presented by the data than might otherwise have been the case.

[221] New garden sites are cleared throughout the year but preferably following dry spells of a week or more for successful burnings. However, there are few taro tops available for planting during the dry season itself. Table 6:4 shows that the most intensive clearing took place during period I, with 4.4 hours per man-week. This figure includes 0.8 hours expended on the communal garden and the time spent on clearing for subsistence therefore approximates more closely to the figure of 3.3 hours for period III, the early part of the wet season.

The time devoted to subsistence gardening tends to increase during the survey. However, in comparing taro, yam and sweet potato, distinct patterns of activity emerge. In taro cultivation

[1] 15.42 and 14.17 inches being recorded respectively.

[TEXT CONTINUED ON PAGE 83]



much time is spent in planting and, more particularly, maintenance, unlike the other crops, which suggests that their labour requirements are much lower.

In spite of the atypical weather experienced during 1964, harvesting patterns vary for the several crops. While time devoted to taro cultivation always exceeds that of the other two crops, harvesting falls off markedly during the dry season. In contrast, the time devoted to the harvesting of sweet potato increases steadily through the survey, while that of yams is confined almost entirely to the wet season when large quantities are stored in specially constructed yam houses (or occasionally in holes in the ground).

As with the sweet potato and yam, work on the minor crops and economic trees is restricted almost entirely to harvesting their products - 1.6 hours per man-week. Ina, pitpit, bananas, sugar-cane, areca, coconuts and breadfruit are the major items in this category.

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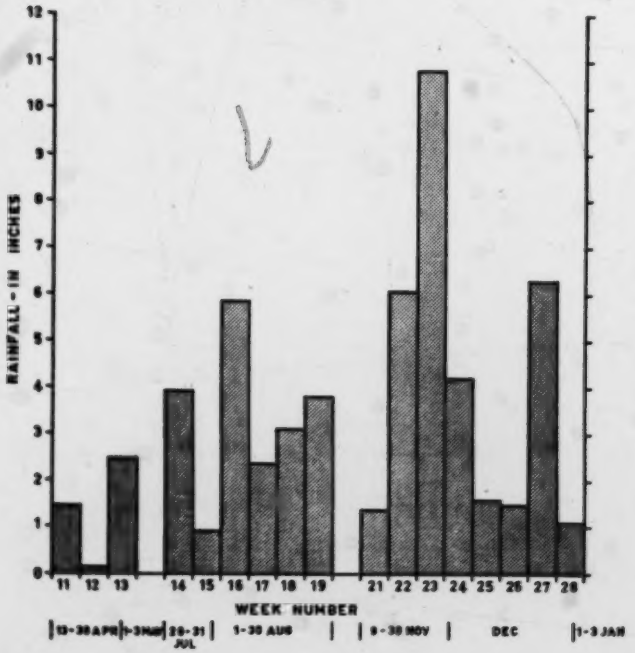
SIVEPE

WEEKLY PRECIPITATION (WEEKS 10 TO 29 ONLY) FIGURE 6:5



512 Some, such as coconuts, bananas, areca and ina, are gathered throughout the year, but pitpit is collected and eaten primarily during the latter part of the wet season, while the harvesting of breadfruit is confined almost entirely to the dry season. It is at this latter time alone that activities connected with the minor foods assume some importance. During period II, 3.4 hours per man-week were devoted to the harvesting of other crops and products, over 60 per cent of this being for breadfruit alone.

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Table 6:4

Sivopo: mean time spent per man-week on all activities in each recording period
(hours per man-week)

Group	Activity		Period I	Period II	Period III	Survey
Clearing			4.4	2.4	3.3	3.7
Subsistence gardening	Fencing		-	-	0.2	<0.1
	Taro	- plant	1.9	2.8	3.0	2.4
		maintain	3.8	3.9	4.5	3.6
		harvest	3.4	1.9	3.0	3.0
		market	0.1	-	-	<0.1
	Sweet potato	- plant	-	-	<0.1	-
		harvest	0.7	1.1	2.4	1.3
		market	0.1	-	-	<0.1
	Yam	- plant	0.6	-	-	0.3
		maintain	-	-	0.2	<0.1
		harvest	0.8	0.1	0.6	0.6
	Minor crops	- plant	-	0.1	<0.1	<0.1
		maintain	-	-	0.1	-
		harvest	1.0	3.4	1.1	1.5
		market	<0.1	-	0.2	<0.1
	Total		11.8	13.5	15.6	13.2
Other subsistence food production	Fishing		0.2	-	0.5	0.2
	Hunting		0.7	0.8	4.8	1.8
	Sago-making		-	1.5	0.4	0.4
	Total		1.0	2.3	5.7	2.5
Other subsistence activities	Preparation of tools and equipment		0.3	-	0.5	0.3
	Construction		2.2	1.6	0.6	1.6
	Total		2.5	1.6	1.1	1.9
Household	Washing		<0.1	0.2	0.3	0.2
	Cooking		4.8	4.6	5.1	4.8
	Collecting firewood		0.2	0.5	0.3	0.2
	Total		5.1	5.4	5.7	5.2
Social obligations	Marriage		-	0.2	-	-
	Death		1.7	0.9	0.3	1.1
	Other		0.8	0.7	1.7	1.0
	Visiting		1.3	1.8	1.3	1.2
	Total		3.8	3.8	3.2	3.4
Cash cropping	Coffee	- maintain	0.2	-	-	0.1
		harvest	0.9	0.2	-	0.5
		process	1.0	0.3	-	0.6
		market	-	0.5	-	0.1
	Rubber	- harvest	0.1	<0.1	0.5	0.2
		market	-	-	0.1	-
	Total		2.2	1.1	0.7	1.4
Paid work			2.0	1.2	1.0	1.6
Sick	Personal		0.5	0.2	1.2	0.6
	Care of sick		0.3	0.2	0.2	0.2
	Total		0.8	0.4	1.4	0.7
External agencies	Purchasing		0.2	0.4	0.7	0.4
	Council work		0.9	1.8	1.0	1.2
	Meetings		1.3	0.5	1.8	1.3
	Church work		0.3	0.3	0.1	0.2
	Church services		3.1	3.7	1.2	2.7
	Total		5.9	6.7	4.8	5.8
Miscellaneous	Recreation		0.1	0.4	0.4	0.3
	Other		0.1	-	1.1	0.4
	Researchers		0.3	-	0.2	0.2
	Total		0.6	0.5	1.7	0.8
Total - all groups			40.0	37.5	44.2	40.6

244 Breadfruit trees grow around the village and in garden areas, some being planted and others self-sown but preserved when garden sites are cleared. All are individually owned. Harvesting is [262] relatively easy, the fruit being removed from the tree with the aid of a knife attached to a long stick. Sago apart, the breadfruit comprises a major element of diet during the dry months.

● 433 While the inland Orokaiva are essentially food-gardeners - a [224] fact dictated largely by the density of occupation where intensive [512] utilisation of the forest has greatly reduced its plant and animal resources - both hunting and sago-making are of limited importance and occupy 1.8 and 0.4 hours per man-week respectively.

224 Traditionally the Sivepe people claim to have hunted feral pig [136] high on the slopes of Mt Lamington but this has ceased now they 'have too much to do'. No such pigs are found in the bush adjacent to the village but bandicoot, wallaby, cus-cus, flying fox, and a variety of birds are not uncommon. Periodically domestic pigs [411] enter gardens whereupon they are usually hunted out and killed, either by the irate gardener or the owner of the animal. While a spear may be used in the latter case, shotguns are now often used or special hunting parties organised where a net is employed. Use of the two shotguns held in the village is usually confined to the owner and others who contributed to its purchase. Such hunting, with the aid of a torch, is normally done on moonlit nights and is most common in the dry season when flying fox are attracted to the ripe breadfruit.

[512] During the survey, however, most hunting was done during period III when 4.8 hours per man-week were recorded, the avowed object being to 'stockpile' smoked meat for the annual Christmas feast held on Sasembata mission station. Large intra- and inter-village group drives were organised daily for two weeks, the activities being initiated by the priest blessing the dogs. Wallabies were the principal animals caught. During both weeks time spent hunting exceeded 11 hours per man-week, or more than that devoted to taro gardening. These drives were facilitated by a spell of unusually dry weather.

222 Sago-making is a highly seasonal activity. In Sivepe, production 252 is confined primarily to the dry season when 1.5 hours per man-week [22] were spent on it, rising to 6.4 hours in week 16 when only taro [512] gardening, among subsistence activities, was of greater importance. [461] The work is arduous and is only undertaken with reluctance as the flour must be produced as quickly as possible following the felling of the tree. It is one of the few activities not interrupted by heavy rain.

[461] Because of the very high labour requirements, sago-making is essentially a group enterprise and, not being popular, is only commenced when a number of families have little producing food in their

[TEXT CONTINUED ON PAGE 87]

252 [461] gardens. If absolutely necessary it will be made without outside assistance, such being the case with one household with inadequate food supplies in its gardens in period III because the head had been absent for several weeks earlier in the year.

241 [262] (ii) Seasonality and the pattern of subsistence food production. While no significant 'dry season' occurred during 1964, the data gathered suggest that the cycle of agricultural activities is partly designed to allow for a dry spell at mid-year. During period II little taro or yam were producing and breadfruit and sago replaced these as the major contributors of carbohydrate to the diet. Yet an agricultural system which is characterised by a period of food scarcity was disrupted by unseasonally wet weather. Heavy rains deterred people from carrying out routine garden tasks, including food gathering, and probably accounted for the postponement of sago-making. On a number of nights during this period evening meals were not prepared because of rain and individual families went to bed hungry.

● 433 512 [432] (iii) Marketing of subsistence produce. This is only a minor activity amounting to 0.3 hours per man-week. Food crops may be sold either at the weekly market at Saiho hospital or exchanged for trade goods at Sasembata mission station, but their rates are so low that there is no systematic production of food crops for sale to these bodies.[1] Although more favourable prices probably obtain at Popondetta market, distance and lack of transport preclude the Sivepe people from selling there.

(iv) Other subsistence activities. Other subsistence activities comprise the preparation of tools and equipment and house construction. Handicraft work only accounts for 0.3 hours per man-week and primarily involves the preparation of axe handles, spears, traps and nets for hunting, troughs for fermenting coffee, a variety of mats and bags made from woven palm leaves, and various decorative items of a ceremonial nature.[2]

While mats and bags are made throughout the year, the other tasks are largely related to seasonal and specialised needs, the peak (0.5 hours per man-week) occurring in period III with the preparation of hunting equipment and ceremonial dress for the Christmas festivities.

Forty per cent of the time spent in the preparation of tools and equipment is taken up by ceremonial goods, 25 per cent by woven baskets and mats, and 20 per cent by traps, nets and spears for

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[1] See p.20.4

[462] [2] String bags have been excluded on the grounds that, although probably the most important piece of equipment, the women usually make them in the course of doing household tasks.

A. [See Category 435, p.20--Analyst]

433 hunting. The little time devoted to the preparation of tools for
512 the main subsistence enterprises reflects the degree of technological substitution which has occurred since contact.

Construction and repair of houses normally continues throughout the year, here occupying 1.6 hours per man-week. In Sivepe such activity declined during the course of the survey as plans were formulated to transfer the village to the new site. Of 13 houses whose occupants were not newcomers to the village, 4 were completely rebuilt during the year and, in addition, 2 completely new houses were built and a number of extensions and repairs made to others. This 'crude birth rate' suggests the life of a house to be about
[342] 3.25 years. Since each house takes about 110 man-hours to build (including the gathering of materials), about 0.6 hours per man-week must be devoted to reconstruction in a normal year. In Sivepe about 0.9 hours were devoted as a result of additional houses being built, the balance (0.7 hours) accounting for repairs and minor extensions.

[252] Household tasks occupy 5.3 hours per man-week, cooking predominat-
[462] ing with 5.0 hours. Of necessity, they vary little through the year.[1] Much of the time taken up by cooking involves simply tend-
[372] ing the fire on which the food is being prepared and it is then that the women often work on their string bags. Most firewood is obtained as a by-product of clearing, suitable lengths of timber being stacked in the garden to dry out and then carried to the village as required.

All the above subsistence activities (food production, construction, handicraft work and household tasks) can be described as 'productive' in that 'the purposeful alteration and combination of physical material' (Udy 1959:2) can be discerned in them. Together they account for 26.6 out of the total of 30 hours per man-week devoted to the subsistence sector of the economy.

512 Only 3.4 hours per man-week are spent in fulfilling social
182 obligations. Although categorised here as non-productive activity, it should be stressed that ritual and informal social interaction are part of the fabric of the total economic system and the kinship networks which form the framework for these interactions serve as the major mechanism for distributing goods produced within the subsistence economy.

171 Belshaw, in discussing Melanesian exchange, states (1965:35):
431 A primary point to note is that a very high proportion of social contacts between adults is accompanied by gift-giving.

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[1] The figure for cooking in period I is an estimate, derived from averaging the figures for the following periods, since relevant records were not initially kept.

512 [75] [164] Systematic data gathered on sickness refers primarily to activities of a preventative nature - the periodic infant welfare clinics and, in one week during period III, a TB survey involving X-rays and Mantoux tests accounted for 9.1 hours per man. However, in the survey as a whole, a mean of only 0.9 hours per man-week was incurred by sickness.

Activities of a minor nature account for an average of 0.8 hours per man-week and include sport, services rendered to the researcher and, during period III, the expenditure of 0.7 hours per man-week in the preparation of the new village site. By the end of the survey much of this site had been cleared and a number of individuals were planting 'catch crops' of taro and bananas.

461 433 Within the total Sivepe economy 'productive' activities account for 29.8 hours expended per man-week, or 73 per cent of activity time. However, the productive component within the subsistence and external sectors differs greatly, being 89 per cent of activity time in the former but only 30 per cent in the latter. The absolute insignificance of cash-producing activities should be viewed in this context, of the relatively unproductive nature of Orokaiva involvement in the external economy.

The organisation of work by households

592 461 Table 6:5 reveals substantial variations in both the volume and patterns of activity between individual households which, while they enable a distinction to be drawn between cash cropper and non-cash cropper, are largely explicable in terms of the structure and composition of the households themselves.

With a mean activity-week of 40.6 hours recorded, the individual household range is 29.4 to 65.3 hours. However, household 12, in which the 65.3 hours per man-week are expended, is somewhat aberrant in that it consists of a widowed woman with six children, the eldest of whom is a full-time nurse at the infant welfare clinic at Sasembata, to which job she devoted an average of 53.7 hours per week. The work accounts for almost half the time expended per man-week by the whole household. This, and the absence of an adult male, seriously undermined their ability to carry out essential subsistence tasks - so they only spent 11.1 hours per man-week on clearing, subsistence gardening and other subsistence food production compared with the sample mean of 19.4 hours. Significantly, by the end of period I the household had left the village, the mother to re-marry and the eldest daughter to reside on the mission station. By eliminating household 12 the range is reduced to 29.4 to 50.4 hours per man-week.

[887] At the lower end of the range are households incorporating the oldest people in the village. While probably less productive in their labour, these people are deprived of a much higher proportion

[TEXT CONTINUED ON PAGE 96]

Patterns of activity and seasonal influences

An average of 43.5 hours per man-week are spent on all activities.[1] However, the general level of activity and distribution of time varies widely from week to week and also, in some cases, seasonally (see Table 7:3 and Figures 7:2 and 7:3).

(a) The subsistence sector

(i) Food production. Subsistence gardening is the most important category of activity, accounting for an average of almost 12 hours per man-week. Over half of this time is devoted to taro cultivation, except during the dry season when planting and, in particular, harvesting of taro are reduced, although maintenance increases. Over the year as a whole, the time spent on taro is almost equally divided between planting, weeding and harvesting. For the other crops, however, little time is spent on weeding and most attention is given to harvesting. This is true of sweet potato and yam, which are usually grown in specialised gardens, as well as of minor crops such as corn, cassava and banana which are usually interplanted with taro. Yams are planted late in the year and harvested in the dry season. Sweet potato is planted both in the dry and early in the wet season, the latter being the main harvesting period, before taro is in full production. Over one-fifth of the 2.1 hours per week spent on minor crops involves coconuts, another fifth bananas and 18 per cent sugar-cane. Eleven per cent is devoted to pitpit but this crop accounts for one-quarter of the total during the wet season. Cultivation of plants that provide edible leaves (ins) accounts for 9 per cent of the time spent on minor crops over the survey, but 29 per cent in the dry season. Corn and pumpkin account for about 5 per cent each.

Clearing of gardens takes place throughout the year, most in dry spells at the onset of the wet season when newly planted crops will benefit from the rain. In February and March 1964, during the wet season, there was an unusually high rate of clearing after a flood in January destroyed several gardens containing maturing crops. During period II (the dry season), the rate of clearing was comparatively slow, partly because the season was abnormally wet and partly because of the large amount of time invested in fencing, which is necessary particularly at this time since feral pigs from more remote bush areas tend to invade the gardens for food. Clearly, the protection of growing crops has a higher priority than the establishment of new gardens.

During the dry season, food-producing activities other than gardening increase in importance, and sago-making is concentrated

[1] See, however, the adjustment for additional data, pp.136, 138.

[TEXT CONTINUED ON PAGE 133]

entirely mourning and funeral feasts. The bulk of the time is evenly divided between more or less formal social occasions and visits to kin and friends. The formal occasions include traditional feasts to mark the end of a dispute, to distribute the first fruits of a garden planted with the help of others, to mark the birth of a first child and to give or receive returns for feasts held previously. They also include non-traditional celebrations such as parties to mark birthdays, the opening of a new school and the saint's day of the local church. Such occasions usually occupy at least half a day and continue until midnight or dawn, whereas visits, as recorded here, are generally of only a few hours' duration. Visits may be made simply to see a friend or kinsman or they may be specifically to make or receive a gift, to return a borrowed article such as a gun, lamp or sago-beater or to discuss matters of common concern such as a projected feast. Visits occurred more during periods II and III but feasts and other formal occasions occupied more time during the latter part of the wet season, when they amounted to 3.1 hours per person per week compared with 0.3 hours per week in the dry and 1.9 hours per week at the beginning of the wet.

Among other activities, the most frequent include seeking employment in Popondetta, journeys impeded by flooded streams or rain and meeting kin or friends returning from visits. The time devoted to them varies greatly from week to week. For instance, after the road-building work near the village ceased early in 1964, little time was spent in gambling or seeking paid work.

The time shown in Table 7:3 as occupied by sickness represents visits to the aid post for personal sickness, care of the sick and attendance at the fortnightly infant welfare clinic.[1] As noted, the incidence of sickness tends to be greater during wet weather when malaria and epidemics of influenza may occur.[2]

Individuals devote a total of 10.5 hours per week to non-productive activities. However, the distinction between these and the productive activities is not clear cut. For instance, part of the labour input in gardening may be designed to ensure a surplus of certain foodstuffs to meet specific social obligations. Similarly, visits to a kinsman may be undertaken in order to organise production and other aspects of a future feast, to assist in time of need or to make or receive a gift of food.

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[1] In addition to this time, individuals were inactive through sickness for an average of half a day a week (see Tables 7:1 and 7:2).

[2] During 1964 there were two influenza epidemics, in April and December.

Chapter 8

The two villages compared

433 184

(a) Levels of activity in relation to available resources

In expending an average of 43.5 hours per man-week the Inonda villagers are slightly more active than their Sivepe counterparts, but the difference relates to the subsistence sector. Although both are communities of cultivators with taro the staple crop, the supplementary food producing activities are substantially more significant in Inonda, with fishing particularly important during the wet season. This more diversified economy partly explains the higher level of subsistence activity at Inonda (see Table 8:1).

More time is required to achieve subsistence at Inonda, principally because of the journey to work: 25 per cent of all activity time is devoted to travelling, even at the new site, compared with only 15 per cent at Sivepe.[1] Thus, if time spent in travelling is deducted, the difference between the two villages is eliminated, Inonda spending 25.1 hours per man-week on subsistence and Sivepe 25.5 hours.

Environmental differences provide some explanation for Inonda's subsistence economy being more diversified and the location of activities more dispersed. Not only are the soils around Sivepe of a uniformly high agricultural value but all the land is forested and therefore potentially available for cultivation. By contrast, the soils at Inonda are of variable quality and at least one-third of the total area is grassland and therefore unavailable for cultivation according to present practices, while even some of the forested areas are unsuitable due to the infertility of their soils. Most Inonda gardens are made on a land system covering only one-fifth of the total area. Probably on account of this generally lower soil fertility, the fallow period at Inonda is about ten years compared with only six at Sivepe and, using Crocombe and Hogbin's and Rimoldi's estimates of the garden requirements per head of

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[1] The contrast is even more marked if the uncorrected percentages are used - 32 per cent and 18.3 per cent respectively.

A. [See Category 461, p.171--Analyst]

433 184 population in the two villages, it is estimated that the total land requirements per person in Sivepe are therefore only 2.5 acres compared with 14.8 acres in Inonda.[1] Given the lack of uniformity in [24] the hinterland of a village which is located at the forest-grassland [222] boundary, where subsistence is primarily derived from the forest and where garden land requirements are high, it is to be expected that travelling times would be higher for Inonda and that the economy should be diversified by using the non-cultivated areas. There are abundant sago palms in the swamps fringing the rivers and, in the absence of breadfruit (numerous in the cultivated areas at Sivepe), these are exploited in the dry season to compensate for the scarcity of garden foods. In fact, Inonda experiences both a drier and more distinctly seasonal climate and this, together with the greater abundance of land, accounts for the greater significance of supplementary food producing activities. Only hunting is practised to much the same degree in the two villages.

461 The transfer of Inonda to a new site did not lead to the expenditure of substantially more time on construction than in Sivepe, where the normal rhythm of repair and rebuilding was in operation. Since it is estimated that in Sivepe 0.7 of the 1.6 hours per man-week spent on construction are restricted to repairs and minor extensions to existing houses it seems that in Inonda, with the transfer in village site, such maintenance work ceased and the labour time so made available was directed entirely to constructing new houses. In effect, therefore, such moves are not as time-consuming as might be expected.

The external sector of the economy absorbs 26 per cent of total activity time in Sivepe and 23 per cent in Inonda, but in both cases [m] only about one-third of this is directed towards cash production. Rather more time is spent in dealings with the external agencies, particularly in Sivepe by virtue of its proximity to a mission station and location in a densely populated area which is more frequently the focus of Administration and commercial interests.

433 184 In Inonda paid work is considerably more important than cash cropping, but it is essentially of a casual and temporary nature

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[1] The estimation of land requirements is derived from the following formula (adapted from Allan 1949):

$$100 \frac{CL}{P}$$

where:

P = percentage of the group territory that is arable under the given technology.
C = number of annual garden areas utilised in the agricultural cycle of cultivation and regeneration.
L = acreage of cultivated land per head of population per annum.

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Table 8:1

Sivepe and Inonda: some contrasts in activity patterns
(hours per man-week)

	Sivepe	Inonda
Clearing	2.9	3.7
Subsistence gardening	13.2	11.7
(of which: taro gardening	9.1	6.6)
Other subsistence food production	2.5	7.8
(of which: fishing	0.2	3.8
hunting	1.8	2.0
sago-making	0.4	1.2)
Construction	1.6	2.0
Total - subsistence sector	30.0	33.5
Cash-producing	3.2	3.7
(of which: cash cropping	1.6	1.0
paid work	1.6	2.7)
External agencies	5.8	3.2
(of which: meetings	1.3	0.3
church work/ services	3.0	1.0)
Total - external sector	10.7	10.0
Total*	40.6	43.5

* A 't' test was applied to the mean weekly figures, to provide some measure of the significance of difference between the mean level of activity in the two samples, using the equation

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s'} \sqrt{\frac{N_1 N_2}{N_1 + N_2}}$$

where s' = the standard deviation of the population. t was computed to be 1.98; the means for the two samples are, therefore, significant at the 5 per cent level.

and was largely connected with the improvement of the Popondetta-Oro Bay road which passes by the village. In Sivepe both are of equal significance. While one girl was in permanent employment, she had assumed no major subsistence responsibilities, was single and, during the course of the survey, left the village to reside on the mission station adjacent to her place of work.

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In each case several cash crops are grown, all of them tree crops. To some little attention is given (e.g. coffee in Inonda) while to others effort is restricted essentially to harvesting and the subsequent processing and marketing of the harvested product (e.g. coffee and rubber in Sivepe, coconuts in Inonda). Further

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8: Waddell & Krinks E-4,5 (1964-1965) 1968 QJ23 Orokaiva QJ23

433 179

attempts are being made to expand and diversify cash cropping by planting more coffee and erecting a communal copra-drier in Inonda and establishing a communal garden in Sivepe. However, in all of them, serious problems have arisen or the venture has actually been abandoned. These facts point to a certain lack of direction and perception of the most appropriate techniques in the development of commercial agriculture.

(b) The relationship of subsistence to the external sector and the availability of surplus labour

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Perhaps the most significant general conclusion to emerge from this survey of activity patterns is that the Orokaiva economy continues to be essentially tradition-oriented. Such monetary activities as exist seem to be additional to, and do not replace, subsistence activities. Although the two villages have, since contact, been incorporated into a wider system, individual participation in it remains essentially passive. There is now a real need for money, and for the products that money can buy, and commercial production within the village is perceived as one way of satisfying these needs. Because of the people's familiarity with cash cropping, and of the under-utilisation of available labour, it is not easy to see why it should not have been more extensively adopted.

There is plenty of evidence that the villages continue to be tradition-oriented. In particular, there is little suggestion of 'a reduction in the acreage under subsistence crops, a narrowing of the normal range of good crops and changes in their relative importance' or 'of a reappraisal of the agricultural value of different types of land and soil' or of 'the movement of whole villages to new sites...the movement of individuals from villages which are poorly located for commercial farming to those which are more favourably situated...[and] the departure of individuals or nuclear families from the village to become independent farmers' as have been indicated by Ward (1964:487-93) in the case of Fiji. No distinct socio-economic groups have emerged at the village level. By contrast, in a recent study of village agriculture in Aitutaki, Cook Islands, three economic groupings are identified - the gardeners, gardener-employees (those with part-time jobs) and employee-gardeners (holding full-time positions) - this breakdown in the homogeneity of the communities being considered as one measure of the degree of commercialisation of the economy (Johnston 1967:36-8 and 91-3). Finally, there is as yet no evidence of individual specialisation where 'The planter restricts and narrows his activities in two directions: he concentrates upon agriculture to the exclusion of non-agricultural activities and on cash crops to the exclusion of non-cash crops' (Johnston 1967:60).

[525] [71]

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Rimoldi, in investigating the recent history of settlement among the Mt Lamington Orokaiva (1966:39-47 and 65-70), distinguishes

three elements of change, first, a trend towards the amalgamation of hamlets into larger units which assume the formal layout now characteristic of Sivepe, second, considerable mobility of settlements, and third, a high degree of individual mobility. However, the first and second he considers to be largely a function of Administration pressures and of ill-defined aims to improve the economic base of their livelihood (as is characteristic of Sivepe's intended move), and the third to be related to the 'vicissitudes of social relationships' rather than to any connection between settlement and garden sites.

The changes which have taken place in the range and relative importance of subsistence crops largely reflect the need to find a more reliable and adequate food supply during the dry season, although the tendency to increase the acreages of both yams and Xanthosoma at the expense of sweet potato and taro might also reflect a conscious effort by some to economise on time and effort in the subsistence sector.

The survey of activity patterns reveals little variation within the samples in the relative importance of the subsistence and external sectors: even those most strongly oriented to cash cropping are concerned first with achieving subsistence. The two most active people in the Sivepe sample, Linton and Palminus, register an above average level of activity through the whole range of tasks, the manner in which they allocate their time being proportionately little different from that of the sample as a whole. This applies equally to the entrepreneur in Inonda, who spends over half his working week in productive subsistence activities. His entrepreneurial activities are directed primarily towards a trade store which is not particularly demanding in terms of his time. In this respect his cash-producing preferences parallel those of other men where contract or casual work is preferred since, in the absence of strict schedules, it conflicts little with the requirements of the subsistence routine.

There is little difference between attitudes toward cash and toward subsistence crops. In particular the attention given to the commercial trees parallels that given to coconuts, areca, breadfruit and other economic trees associated with the subsistence sector in that, apart from planting and harvesting, maintenance is essentially restricted to facilitating access. The absence of any specialised techniques of arboriculture is carried over from subsistence to cash crop trees, the only distinction being that the cash crops are planted in formal stands. The work routine is much the same in that sustained and regular effort is neither required or given and the duration and intensity of individual periods of cash cropping work differ little from that for productive subsistence work.

249 476 While efforts have been and continue to be made to organise communal cash cropping, based initially on the expatriate assumption that voluntary co-operative effort is a feature of the culture and an instrument for increasing productivity, they largely fail. Although the communal rubber planting in Sivepe continues to be worked, this is not a reflection of good management but rather of the intrinsic hardiness of a tree which has been planted in its natural habitat, the forest, and is subject to the depredations of 461 184 few diseases or pests. In Sivepe, work groups in cash cropping are no larger than in subsistence, although in Inonda they are substantially bigger, perhaps on account of the influential role of the entrepreneur. The point remains that work groups incorporating individuals other than members of an individual's families of procreation and orientation are not typical of subsistence production in this area, with the exception of those activities which physically require the participation of a large number of people as, for instance, sago-making.

433 184 166 464 In both communities the choice appears to lie between subsistence production plus peripheral commercial activities on the one hand and migration out in search of full-time employment on the other. In Sivepe the latter course is frequently taken, not only by single men, but also by some with dependents, who remain in the village in the care of parents. With 37.8 per cent of the potential adult male labour force absent and a number of dependents staying behind, a considerable burden is placed on the remaining residents in Sivepe. Only 25 per cent are absent at Inonda and no dependents have been left in the village. Although the distinction is not manifested directly in the length of the activity week in the two villages, it probably accounts for the greater incidence of temporary absences recorded in the latter - 17 per cent of total available labour time compared with 6 per cent in Sivepe - in that the slightly higher proportion of adult males to total population makes the subsistence economy less restrictive on individual mobility.

433 While activity patterns suggest that cash-producing activities are added to the subsistence pattern with little apparent stress, the question does arise as to whether given the existing technology, socio-economic matrix and level of productivity the communities have already expanded their commercial activities to the optimum level. There is no evidence that the expansion of cash cropping and paid work has resulted in any commensurate contraction in the time devoted to non-productive activities. The data confirm Fisk's general hypothesis (1962) concerning the availability of surplus labour. Although the Orokaiva are, by any objective standards, a reasonably active people who spend little time on informal social and ceremonial activities associated with the subsistence sector, and although, perforce, activity is restricted essentially to the daylight hours, there are some 6 hours per man-day remaining apparently unutilised. At present this time is distributed between resting, eating meals and informal socialising within the village.

8: Waddell & Krinks E-4,5 (1964-1965) 1968 OJ23 Orokaiva OJ23

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Nevertheless it is incorrect to apply Salisbury's proposition (1962:216-20), that the change from a stone to steel technology in the New Guinea Highlands has resulted in a saving of two-thirds in the time allocated to specified axe-using tasks, as further evidence for labour availability. Apart from the fact that the proposition itself is not based on quantitative data and must be regarded only as a hypothesis, if, for the sake of discussion, the factor of 3 be applied to time spent in clearing, fencing and construction (the main axe-using tasks) in Sivepe and Inonda, an additional 10.8 and 11.6 hours per man-week respectively would be required for the work with a stone technology. Since 10.7 hours in Sivepe and 10.0 in Inonda are already being directed to the external sector each man-week virtually all the labour time made available as a result of this technological change is in fact being utilised.

While there is no evidence from the activity patterns to suggest any seasonal conflict in the labour requirements of cash and subsistence cropping there is, nevertheless, some inconclusive data from both villages to suggest that a substantial extension of cash-producing activities would conflict with the requirements of the subsistence sector. In Sivepe the processing of coffee - the most labour intensive of all cash cropping work - and the harvesting of rubber typically occur early in the day and so before the start of the normal daily routine, suggestive of the fact that extra time is 'made' to carry out these tasks.[1] At Inonda it appears that where a household head engages in full-time employment for more than two or three weeks the family finds difficulty in maintaining its food gardens and so meeting all its obligations.

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Given that the development of cash cropping bears a direct relationship to activity patterns the data suggest the basic issue to be not one of absolute availability of labour but rather of the organisation of labour and time. The hypothesis is suggested that in a primarily subsistence-oriented economy, those cash-producing activities which do not demand a significantly different and longer work routine will be preferred. The basic feature of this routine is that one activity need not be pursued to the exclusion of others and each can be interrupted at will. So the Orokaiva working day (and week) encompasses a wide range of tasks, each pursued for only a relatively short period of time. As with the Aitutaki villagers of the Cook Islands, 'commercialization has led to few appreciable innovations in the cropping system, land tenure, technology or labour' (Johnston 1967:68).

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The present relative adjustment of cash to subsistence cropping may only be a temporary feature of the village economy and the fact

[1] However, a higher yield of latex is also obtained by tapping early in the day.

8: Waddell & Krinks E-4,5 (1964-1965) 1968 OJ23 Orokaiva OJ23

433 that it has been reached at all among the Orokaiva is probably due both to the level of out-migration into the permanent labour force and to the local opportunities for wage labour and contracting and so the ability of village residents to meet many of their needs for cash by other means. In the sphere of activity patterns therefore, viability of the traditional system remains largely unimpaired.

[178]

437 employees. The need for these people to evolve some sort of exchange relationships with neighbouring villagers is explained by their low salaries and restricted subsistence resources. Their presence also facilitates long distance hawking, in that people from the coast will come to stay with relatives employed inland, bringing with them their fish and lime.

436 The main use of cash is as the medium of exchange with the external sector and most transactions are, therefore, with organisations, with 80 per cent of disposals to them. These cover not only purchases of goods but tax payments and mission contributions, which together account for 15 per cent of all disposals to organisations. Only a part of this expenditure is met by the sale of cash crops and subsistence produce and by village-based wage labour. If gifts from the researchers are disregarded, remittances from wage earners outside the District rank with earnings produced directly by the sample's endeavours (37 and 40 per cent respectively of total acquisitions), while a further 8 per cent of total income is derived [433] from wage earners within the District. In effect the external sector of the village economy is dependent to a very substantial extent on the earnings of those kinsmen in wage labour.

The geographical dimensions of exchange

439 As revealed in the preceding section, the entry of a number of kinsmen into the external sector of the economy and their scattering over a wide area considerably complicate the spatial dimensions of exchange by introducing something of a random element based upon the distribution of expatriate settlements and institutions rather than of indigenous population. Thus, three-quarters of all clothing originates from Port Moresby since that is where the highest income earners (among kin) are employed; the 34 per cent of cash income obtained from wage earners outside the District came from three separate points in the Central, Gulf and Western Highlands Districts where relatives are stationed; while the bulk of foodstuffs are purchased in a store at Awala - one hour's walk from the village - rather than another at Kongehambo - only 20 minutes away - because the former is better stocked.

437 438 With novel means of communication available, particularly the postal service, the circulation of non-perishable goods which are not a product of the village economy is largely independent of factors of distance. Further, such circulation operates primarily outside the network of subsistence villagers, is restricted principally to the monetary system and is of a more strictly 'economic' nature. By contrast the exchange of subsistence produce and labour services takes place predominately at the village level, and here a more significant geographical (and sociological) dimension to exchanges can be identified.

437 uncommon to assist relatives from other villages in such major operations as clearing new garden sites but, with one exception, cash cropping services are confined to the intra-village level.

In conclusion, exchanges are primarily intra- and inter-village, and they operate over a highly restricted geographical range. Further, in the case of cash cropping and during the seasonal food shortages there is a tendency for this range to contract to the intra-village level.

The network of exchanges among kin

433 Apart from the absence of any generalised medium of exchange, it is the strength and ramifications of kinship networks, affirmed by reciprocal exchanges, which are believed to have the most deleterious effects on economic growth by inhibiting the accumulation of individual wealth. Thus, where an individual has access to a scarce resource, for example, money, obligations currently effective with kin permit the latter to register some claim to it, and result in its division and rapid distribution.

121 Murdoch (1949:92) defines a kinship system as 'a structured system of relationships, in which individuals are bound one to another by complex interlocking and ramifying ties'. The most important dimension of this system is 'distance' where, in Murdoch's case, an individual's relatives fall into four major categories - primary, secondary, tertiary and distant relatives. Primary relatives comprise members of the same nuclear family as a person - father, mother, sister, brother, spouse, son, daughter; each of these have primary relatives of their own, most of which are not primary relatives of Ego - for example, father's father, mother's brother, wife's sister - and are spoken of as secondary relatives. Each secondary relative, in turn, has primary relatives who are neither primary nor secondary relatives of Ego, and are therefore termed tertiary relatives - for example, father's brother's wife, father's sister's son, father's father's mother. Distant relatives are more remote than these.

The form and intensity of exchanges are held to be explicable largely in terms of such models of kinship. Sahlins (1965:149), in identifying a spectrum within the field of reciprocity (from 'generalised' through 'balanced' to 'negative reciprocity'), proposes that

> The span of social distance between those who exchange conditions the mode of exchange. Kinship distance...is especially relevant to the form of reciprocity. Reciprocity is inclined toward the generalized pole by close kinship, toward the negative extreme in proportion to kinship distance.

438 daily exchanges of products between villagers when they have a temporary surplus, rather than a continuing specialisation. Al-
[433] though some individuals do tend to concentrate more time than others on certain crops - as the widower in Inonda does with yams[1] - surpluses (and their counterpart, shortages) are frequently the
[574] result as much of chance as of policy. Thus, near the end of the
[431] dry season a settler held a feast at short notice to mark the end of a dispute with an Inonda man. The Inonda people decided not to make a return presentation at the same time since they had only sago available and would be humiliated if they offered this in return for the others' taro. In the event, contributions by people from the settlement blocks and other villages included more banana and sweet potato than taro.

The circulation operates at several different levels: the level of the village itself, that of a context which is more or less restricted to the occurrence of close kin and which, except perhaps for some affines, is only about three miles in radius, and finally the broader district level, which embraces greater environmental differences and is the sphere of operation of the comparatively
[436] long-distance hawkers from both the coastal and mountain areas. At
[178] this level, the volume of exchange is small; it is not necessarily based on kinship or even friendship ties and it is now almost entirely monetised.

437 (ii) Labour services. Labour assistance in the subsistence
221 sector shows a pronounced seasonality (see Table 11:6). This is largely due to the fact that 46 per cent of all the assistance received in the subsistence sector during the survey was in sago-making and all of this occurred during three weeks in the dry season.

Table 11:6

Inonda: mean weekly transactions of labour services during each recording period
(hours)

Labour services		Period I	Period II	Period III
Cash sector	Acquisition	1.9	4.0	1.5
	Disposal	2.5	1.6	2.6
Subsistence sector	A	8.3	67.6	10.5
	D	11.5	38.8	4.7
Total	A	10.2	71.6	12.0
	D	14.0	40.4	7.3

[1] Cf. pp.166-7. A
A,[See Category 812, pp. 166-167--Analyst]

437 476 again reflecting assistance given by young people from outside the village. In addition to the two Seva men, whose help was requested by the entrepreneur, a young married couple came from Kendata village to assist household 17. These were the children of the sister of the household head's wife, who is also from Kendata.

Assistance in hunting and butchering of game shows marked seasonality, falling almost entirely into period I. This reflects the concentration of feasting in the same period, when men will request the help of those noted for their skill in hunting to provide the necessary meat.

Assistance in household tasks such as collecting water and cooking is mostly given by visitors, particularly women, from outside the village (see Table 11:16). The widow, however, received considerable help from two villagers when she made about 20 tapa cloths. Household assistance accounts for only 5 per cent of the subsistence services.

437 Most cash sector services are given in establishing or tending commercial crops, particularly the pruning and weeding of coffee gardens, which accounts for 55 per cent of the time disposed and 39 per cent of the time acquired. One man received assistance from close kin (his mother and sister) in clearing and staking out a new coffee garden.[1] One-fifth of the labour given was in weeding cocoa on a settlement block across the Girua River, reflecting an obligation incurred by one householder who had married the settler's step-daughter. Assistance received by the trade store owner in operating his store and in marketing other produce accounts for most of the other services in the cash sector. Labour assistance in the cash sector accounts for only 12 per cent of all services given, but assistance in the main task, maintenance of coffee, [433] exceeds that given in many subsistence operations and equals the amount given in hunting services. Thus, although the cash sector remains in some ways (as in the circulation of cash itself) peripheral to the village economy, it is integrated to the extent that it provides a recognised channel for meeting obligations through labour services.[2] In some cases, the receipt of assistance requires a return gift of cash, such assistance being one of the few sources of cash income available for old people or for women. In other cases, as with the settler's son-in-law, assistance in the cash sector is a means of meeting a traditional obligation. In sum,

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[584] [1] See p.246.

[2] Crocombe and Hogbin (1963:81, footnote), referring to assistance given to the Girua block settler by his son-in-law, point out that traditionally a prospective groom would assist his father-in-law with house-building or garden clearance.

[TEXT CONTINUED ON PAGE 439]

service. In Sivepe sustained reciprocal exchanges operate primarily among members of an extended family and secondarily within a single generation (as between cross-cousins or ego and his wife's brother). In the first a significant degree of economic inter-dependence is apparent, while in the second exchanges serve to support alliances which may be both social and economic in character. Because of the continuing nature of the relationship no final settlement occurs and reciprocation is, therefore, frequently delayed. Elsewhere major exchanges are more typically characterised by immediate reciprocation, particularly where the obligation is a specific one relating to particular goods or service. In consequence only the casual exchanges, which themselves comprise but a small proportion of the total quantity of goods and services transacted, can be judged a drain on resources in the sense that they might serve to inhibit individual aggrandisement.[1] Furthermore, in most instances, the proportion of total production exchanged is so slight that the system cannot be considered to function as a major limitation on productivity. Even where the proportion is high, as with pigs or sago, there is normally immediate reciprocation to an equivalent, and often negotiated, value. In effect, therefore, it is less the goods than the relationship which determines the type of exchange adopted and according to the available evidence, this applies regardless of the extent of individual involvement in the monetary economy.

With the exception of labour services the mean volume of transactions per man-week in all categories in Inonda is about twice the level of that in Sivepe (see Table 12:1). However, the area over which most of them operate is much the same; at Inonda, 87 per cent of the acquisitions and 89 per cent of the disposals of subsistence produce are effected within a radius of two miles of the village, compared with 91 per cent and 81 per cent respectively at Sivepe. This difference of scale is largely explicable in terms of the greater socio-economic diversity of the Inonda neighbourhood and, related to this, the fact that virtually all the village's cash income is locally derived whereas at Sivepe a major source is remittances from kin, with whom there is little direct contact.

At Inonda a more restricted range of subsistence produce is available; with the exception of sago, there is a scarcity of staple foods suitable for consumption during the dry season. At the same time there is an abundance of fish and game within the group territory. Within a short distance of the village live ex-servicemen settlers (some of whom are kinsmen) and plantation labourers, while access to the wage earners in Popondetta is facilitated through the market there. The limited number of Inonda people in the permanent

[1] See pp.181-2.

[TEXT CONTINUED ON PAGE 281]

Chapter 13

Rural productivity and capital formation

It has been demonstrated that, among the men at least, there is a significant amount of unutilised labour time available and that, although the Orokaiva are evidently committed to the cash economy, individual involvement is marginal. In particular, the commercial production of agricultural crops is poorly developed. Since this is the one form of enterprise which would appear the least disruptive of the subsistence routine and which exploits the available resources of land, labour and customary skills some explanation is required.

Although no direct evidence is available, Orokaiva diet, like that of many New Guinea societies, is probably adequate in calories but deficient in protein content. The ability of adults to undergo sustained periods of hard work, either in employment or in such subsistence tasks as sago-making, suggests that diet does not impose serious limitations on their productive capacity. It is worth noting, however, that there is a marked falling off in the level of activity in Sivepe during the dry season at a time when the diet, heavily reliant on sago, is least satisfactory. Moreover, this coincides with the coffee flush.

Both villages have access to more agricultural land than is required for subsistence. Crocombe and Hogbin (1963:10) estimate that, at Inonda, there are 580 acres of 'good gardening land available', of which only 127 acres are presently required. Rimoldi (1966:20-1) estimates the Sivepe sample's requirements to be 110 acres out of an available area of 138 acres, all of which is considered suitable for cultivation. In the former village only about 5 acres are under commercial crops (coffee, coconuts and cocoa) and 4.6 acres in the latter (coffee and rubber). Accessibility may be important in the failure to plant additional areas under cash crops. The preference for establishing such plantings close to the village at Sivepe, where the initial processing is carried out, has already been noted.[1] In the case of Inonda the degree of commercialisation is influenced

[1] See pp.110-11.

A.[See Category 361, pp. 110-111--Analyst]

8: Waddell & Krinks E-4,5 (1964-1965) 1968 QJ23 Orokaiva QJ23

311 by the dispersal of suitable agricultural land over a wide area, creating a large 'journey to work' component in all productive tasks. After moving the village to its new site, an area about twenty minutes' walk away was selected for extensive new coffee gardens (partly on the grounds of proximity to an ample supply of water), but it was eventually rejected and seedlings were planted instead in harvested food gardens only five minutes away from the village.

433 For the indigenous producer transport is a major consideration. Clark and Haswell (1964:157) state that

> The methods of transport available to subsistence agricultural populations...are so costly that produce only has to be carried a limited distance before most of its value, from the point of view of net returns from the sale, has gone.

Porterage is arduous work requiring a good diet, and the minimum cost measured in terms of kg. grain equivalent/ton km., is high compared with other modes of transport.[1] The lower the value of a good per unit weight the more critical this factor becomes. In the case of coffee and copra, where initial processing results in a weight loss in excess of 80 per cent,[2] considerations of distance from the planting to the village (where the processing is carried out) are [361] particularly important. The Sivepe people market their parchment coffee at a point about one hour's walk from the village but they consider the distance excessive and hope to eliminate it by relocating the village on a road accessible to buyers' vehicles. If a journey of one hour's duration is considered the maximum they will carry their parchment coffee, it is reasonable to suggest that one-fifth of this time, or twelve minutes, is the maximum they are prepared to walk from village to garden to harvest the crop. Certainly it is evident that, given the means of transport available, the marginal utility of cash cropping decreases rapidly from village to garden and to point of marketing, with the rate of decrease considerably higher in the former direction.[3]

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[1] See Clark and Haswell 1964:160-3.

[2] Among the Chimbu of the New Guinea highlands it is estimated that 5.48 lbs of arabica cherry produces 1 lb of parchment (Brookfield: personal communication) - a weight loss of 81.8 per cent. It is assumed that the kernel comprises one-third of the total weight of a coconut and, of this, 50 per cent is water. In good quality copra the moisture content is reduced to 6 per cent - i.e. a weight loss of 81.6 per cent is effected in the production of copra (Department of Commerce and Agriculture 1953:1).

[3] While the ratio may remain constant the actual time involved will, of course, vary greatly from point to point, according to such considerations as the utility of money, expectations from cash cropping, etc. Thus the Aiga must walk for 3 hours or more to sell their cocoa (Rimoldi: personal communication).

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Early in 1966 DASF in Popondetta, working through the OCGS, recommended the establishment of several fermentaries through the area which would purchase cherry. The object of the scheme was, firstly, to increase the cash return to the grower by eliminating time-consuming and inefficient pulping at the village level and, secondly, improve the quality of locally-produced coffee. The Orokaiva expressed their opposition to the proposal; a reaction which is readily understandable in terms of the problems inherent in marketing cherry, with its much lower value per unit weight than parchment.

Although the transport situation is largely beyond the control of the individual grower, the low level of productivity characteristic of the handling of cash crops is not entirely so. DASF at Popondetta estimate optimum yields of coffee to be of the order of 2 lbs of parchment per tree. The yields realised at Inonda during 1964 amounted to only about 0.37 lb per mature tree although those at Sivepe, where the ecological conditions are more favourable and the cash economy more dependent on coffee, exceeded 1.5 lbs. Although dissatisfaction with prices obtained early in the season frequently deters growers from harvesting all their coffee, as does the obligation to reciprocate with cash any assistance received in transporting it to the selling point, returns to labour are reduced by inefficient techniques. Fig. 13:1 indicates the typically haphazard movements of coffee pickers, where there is no systematic removal of cherries and a tree may be returned to several times in the course of a single period of harvesting. Due to a lack of pruning trees often grow 10 ft high or more, leaving many cherries out of reach. The lack of suitable receptacles in which to put the harvested product further reduces the efficiency of the picker - cooking pots and their lids are often used, leaving only one hand free for the actual picking. Even more inadequate are the techniques of hand pulping often used.

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Similar problems are associated with rubber in Sivepe, although a reasonable level of production is maintained.[1] The communal planting contains a large number of closely spaced, self-sown trees which inhibit movement. Ignorance on the part of a number of the users as to the correct method of tapping has resulted in the scarring of many of the trees and a consequent reduction in their yield. As with coffee, trees are tapped at random, while the quality of the latex produced suffers from a lack of proper equipment.

Finally, at Inonda, the first quantity of copra produced was spoiled by smoke when husks were added to the fire. Where there is a communal element, difficulty arises out of a failure to delegate

[1] See Rimoldi 1966:93.

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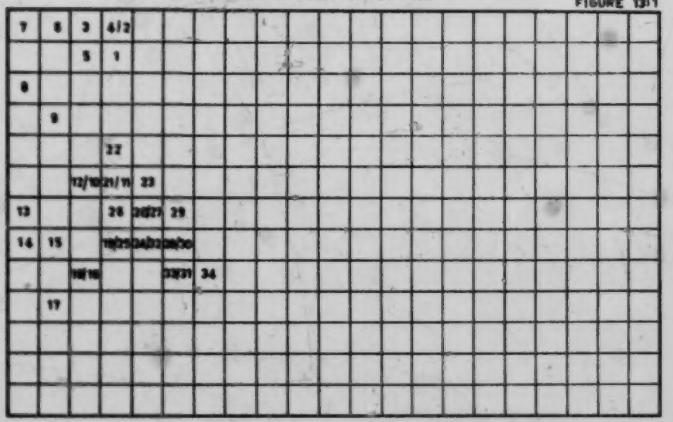
SIVEPE: THE TECHNIQUE OF HARVESTING COFFEE

THE SEQUENCE OF MOVEMENT OF ONE MAN BETWEEN TREES OVER A 1.6 HOUR PERIOD

EACH SQUARE REPRESENTS ONE TREE, THE TREES BEING SPACED AT 8 FEET INTERVALS

FIGURE 13:1



●433 responsibility effectively, but, in all cases, a serious problem is lack of knowledge on the part of the cash cropper. Such recent developments as the copra scheme at Inonda and the communal garden and individual rubber plantings at Sivepe clearly reflect a continuing interest in commercial agriculture. A general failure to develop the appropriate skills would seem to be explained by the inadequacy of DASF extension patrols. Before the establishment of the Ombi-Tara scheme[1] the department did not formally concern itself with village rubber, while educational patrols in connection with the other crops are infrequent, and so little time is spent in each community that the benefits accruing from instruction are slight.

Table 13:1 details some returns to labour from the production and marketing of cash crops in Sivepe and Inonda. Rubber emerges with the most favourable return, at 12c per hour, primarily on

[1] See Morawetz 1967.

[TEXT CONTINUED ON PAGE 212]

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Table 13:1

Some returns to labour from established cash crops

Crop	Village	No. of sales	Total hours worked*	Return (in cents per hour) Range	Mean
Rubber	Sivepe	3	112.3	9-15	12
Coffee	"	5	727.4	6-13	9
Copra	Inonda	1	30.7	-	8

* Harvesting, processing and marketing.

account of the limited amount of labour-time required to coagulate rubber in the village, when compared with the preparation of parchment coffee or copra. The differences are, however, slight and the return from coffee is inflated on account of the significant labour contribution made by children in pulping being disregarded, while the figure for copra refers to an initial attempt at production and efficiency is likely to have increased subsequently. Although rubber is generally recognised to be an 'easier' crop at Sivepe, estimates of commercial trees within the sub-district do not suggest any widespread preference for it,[1] and cash crop preferences appear to be placed on considerations other than that of the return to labour.

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Coffee is the most widely-planted tree, partly no doubt because of encouragement by DASF, but also because it has a much higher value per unit weight than the others, being marketed for 18c per lb. Rubber, as coagulum, markets at 5c per lb and copra and cocoa at about 3c. This higher intrinsic value is extremely important in the prevailing marketing situation where cash crops must normally be carried some distance to the point of sale. Furthermore, not only does the seller of rubber or copra receive a lower gross return per man-journey (see Table 13:3), but his net return may be reduced through repayment for transporting these bulkier crops to the point of sale.

[434] [461]

Cash cropping is only one of several important sources of income and, in Inonda, it is comparatively insignificant. Although it can generally be presumed that the principal reason for embarking on cash-producing activities is the acquisition of money,[2] an investigation of comparative returns to labour does not provide an entirely satisfactory explanation for the status of commercial crops.

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[1] See p.18.

[2] In the case of medical work at Sasembata mission and labouring for settlers, the acquisition of cash is certainly not the sole or even main motive. See pp.30-1, 93.

A. [See Category 461, pp. 30-31; Category 797, p. 93--Analyst]

8: Waddell & Krinks E-4,5 (1964-1965) 1968 QJ23 Onokaiva QJ23

Table 13:2

Some returns to labour from cash-producing activities other than cash cropping

Activity	Village	No. of payments	Total hours worked	Return	
				Total ($)	Per hour ($)
'Marketing' pig	Sivepe	1	4.8	8.15	1.70
Contracting	Inonda*	1	54.2	36.00	0.66
Sale of timber	" *	2	56.8	20.00	0.35
Labouring, for army	"	6	7.2	2.40	0.33
Operation of trade store	" *	0	6.2 per week**	1.59 per week	0.26
Election work	" *	1	21.8	4.00	0.18
Gambling	"	8	95.0	11.30	0.12
Labouring, for contractor	"	6	323.1	36.00	0.11
Marketing fish and meat	"	19	272.7	25.70	0.09
Marketing produce	Sivepe	11	100.3	9.45	0.09
Labouring, for settler	Inonda	2	199.7	9.00	0.05***
Labouring, for road construction	"	2	157.5	8.40	0.05
Contracting	Sivepe	1	271.2	6.00	0.02
Medical work	"	1	53.7 per week	0.26 per week	0.05

* Indicates activities only undertaken by the entrepreneur at Inonda.
** All rates per week are expressed as means.
*** In addition to cash, the labourer received at least one meal of taro or rice a day.

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433 434 As shown in Table 13:2, returns vary greatly, with some of the most favourable activities being pursued only by the entrepreneur in Inonda - a man who profits greatly by his personal contacts with a number of expatriates. By far the highest returns are obtained from marketing pig within the village, but dictates of custom restrict the frequent practice of this. While 'establishment' costs - in the sense of rearing pigs, growing produce, seeking contracts and employment, etc. - have been disregarded in estimating these returns they are, at the present stage of development, very low and often 'hidden' by subsistence sector requirements. Pigs are reared and garden produce grown as a part of the subsistence routine and their marketing is largely incidental; the decision to market wild game may only be taken after a successful hunting expedition; and the entrepreneur is well-known to the Administration as a reliable and resourceful individual and is often approached first about contracts.

The proliferation of cash-producing activities suggests one of three possibilities: that any single source of income, such as cash cropping is by itself inadequate; that cash cropping is not considered the best source of income; that demand exceeds the income from any one source. While opportunities vary greatly from one individual to another, the question of choice between individual activities seldom arises since many occur so irregularly that they cannot be considered reliable sources of income.

Two main considerations appear to determine preferred means for the acquisition of cash: firstly, reliability of income, and, secondly, size of individual cash payments. Each bears some relationship to the criterion of returns to labour but distinctive elements are also incorporated. An established demand for cash implies the need for a regular income and, among the range of activities, only cash cropping and the marketing of subsistence produce can provide this for the majority of villagers. If establishment costs are taken into account returns from the latter are higher, while its complete adjustment to the agricultural routine [435] renders it a more suitable activity for the subsistence farmer. However, the value per unit weight of garden produce marketed at Saiho is, at 2c per lb, insufficient to elicit serious interest in Sivepe, while its perishability, relative to cash crops, is an added deterrent. The unit value of smoked fish and meat sold by the Inonda people at Popondetta market is much higher (20c and 10c per lb respectively) but there are likely to be social pressures operating against the too-frequent commercial exploitation of these village resources: an opposition somewhat similar (in terms of the [431] utilisation of a scarce resource for personal gain) to that voiced in Sivepe to the sale of domestic pigmeat. While such an attitude was never overt during 1964 it serves as a partial explanation for the fact that individuals often distributed game through the gift exchange nexus when they could have sold it at the market.

433 434 (461).

At Inonda there is a generally expressed preference for wage employment. Compared with most other activities, returns in this are less, but a weekly income is assured. By contrast several hours may be spent in hunting or fishing and marketing with little or no return, and gambling may result in loss. Shortly after the end of the survey four men from Inonda obtained employment in Popondetta, involving a ten-mile journey to work each day. At the normal wage rate for casual labour the returns would be particularly low, while full-time employment would also make it difficult for them to maintain their food gardens. Although some men are able to call on young men from other villages to assist in garden maintenance,[1] this is not always possible and married men often need to leave their jobs to fulfil obligations in the village and embark on a period of intensive garden work.

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Capital formation and investment and the utility of money are matters of immediate concern to the villager who participates in the cash economy in order to raise his standard of living. Trade store stocks are restricted to cheap consumer goods which give the purchaser little lasting satisfaction. Earnings are so small that once major commitments such as council taxes are settled, what remains is often sufficient only for minor purchases. Facilities for the effective saving of cash are inadequate; people are unwilling to walk several miles to deposit small sums at a savings bank agency, and money held in the house is immediately available for casual demands. This unsatisfactory situation is an inevitable feature of a predominately subsistence economy. For this reason villagers appear to place some importance on the size of individual cash payments regardless of the labour input involved, for, the greater the sum, the greater the potential utility of the money. It is in this context that the particular significance of remittances to the Sivepe economy can be understood. All important instances of capital saving and investment in the two villages followed receipts of large sums of cash.[2]

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The pre-eminence in Sivepe, in terms of size of cash payments, of sales of coffee, pigmeat and remittances is shown in Table 13:3. In spite of the considerable price fluctuations which may occur, coffee is the only one for which there is any degree of reliability of income. The position of pigmeat in terms of size of payment and of returns to labour explains the very considerable temptations evidenced in Sivepe to 'market', while the small payments for rubber, which are a direct function of its low value per unit weight, provide a partial explanation for the failure to develop it further as a cash crop, in spite of its relatively high returns to labour.

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[1] See Crocombe and Hogbin 1963:64.

[2] See pp.204-5 and 256.

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Table 13:3

Sivepe: mean size of individual cash acquisitions from major sources

Item	No. of occasions	Income (in $) Total	Mean
Sale of coffee	13	159.95	12.30
'Marketing' pigmeat	2	18.15	9.08
Remittances (from outside the District)	17	153.00	9.00
Sale of rubber	5	23.70	4.73
Payment for work on settlers' blocks	7	32.60	4.66

Note. The differences between Tables 13:1 and 13:3 in number of sales of coffee and rubber recorded are explicable in terms of the availability of appropriate data on labour inputs.

433 The overall pattern of involvement in the monetary economy covers a wide range of cash-producing activities but suggests only a limited commitment to cash cropping itself. Although the productivity of these crops could be readily increased the villagers do not seem greatly interested. In part they are deterred by marketing difficulties, but of equal importance is a cautiousness founded on past experience. Rimoldi (1966:101) remarks:

> The people's experience of commercial agriculture has been so confusing and the returns to be derived so problematical that we are not prepared to say that, assuming the continuation of present marketing conditions, any member of Sivepe firmly believes that cash crops would still warrant extensive investment of his time and capital.[1]

The history of cash cropping among the Orokaiva is extremely chequered and is reflected in a continuing unwillingness to be committed to it as the principal source of income. Instead, more of an opportunist approach to money is adopted, and this may involve taking work where the returns are extremely small.

461 Although Crocombe and Hogbin (1963:83) have suggested that considerable increases in agricultural output could be effected without the introduction of capital, the villagers themselves consider major investments to be an essential concomitant of such increases, if only in order to demonstrate to others the advantages they have effected. Preference is therefore placed on activities characterised as much

[1] See also Crocombe and Hogbin 1963:82.

8: Waddell & Krinks E-4,5 (1964-1965) 1968 QJ23 Orokaiva QJ23

Chapter 14

The dual economy: some implications

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Both Sivepe and Inonda are characterised by a generally low level of involvement in the external economy, and particularly in cash cropping. Although individual villagers are constantly required to make decisions concerning their commitment to cash, none have begun to specialise in commercial production and none have distinguished themselves from their peers through the accumulation of wealth. This occurs in spite of a definite under-utilisation of labour and in the apparent absence, among the Orokaiva, of customary factors of a type generally considered to seriously limit individual endeavour.[1]

A number of facts have emerged that illuminate this situation; namely, that, in terms of activity time, individual involvement in the external sector is largely of an unproductive nature, extension services, transport and marketing facilities are inadequate, returns to labour are low, the small sums of money usually handled are of very limited utility, and capital formation is difficult.

Although there are indications that individual economic advancement is best achieved by a physical break with the village, as through resettlement or migration into the urban labour force, the capacity of the national economy to absorb people in these ways is very limited. The problem is, therefore, one of raising the general level of development within the Orokaiva village (i.e. the existing cultural context). The limitations stated above only illuminate particular aspects of this problem which, it is suggested, is fundamentally an organisational one associated with the juxtaposition of two cropping systems in single units of production.

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[1] Two of the most widely recognised are 'first, that concern with ceremonial channels limits energy and prevents it from operating in other directions, and second, that jealousy places a limit upon achievement and accumulation too far ahead of one's peers' (Belshaw 1965:38). See also Nash 1966:35-6. Admittedly such 'controls' may be absent precisely because, for the other reasons noted, no individual is obviously far more successful than the others.

Two largely unrelated agricultural systems are practised side-by-side, with cash cropping (or the alternative cash-producing activities) utilising labour time surplus to the requirements of the subsistence sector. Productivity in both types of production is low and, furthermore, any expansion in cash cropping is not necessarily paralleled by an increase in productivity or reduction in subsistence agricultural activities. 433

The Administration's extension policy is concerned both with 'raising the level of subsistence in the villages' and 'introducing the economic means of supporting a higher standard of living (DASF 1959). While such a policy might promote development with the least possible risk to the producer, it has a direct bearing on both the quality and degree of individual involvement in commercial activities. [654]

One agricultural extension officer has noted that 'The subsistence farmer's involvement in cash-cropping has...added to the complexities of his decision-making and lays increasing emphasis on his role as a farm manager. He now has to make more complex decisions and choices about what to produce, how to produce and how much to produce' (Reed 1966). Individual specialisation is, effectively, discouraged because the mechanism is not being developed for an exchange of subsistence produce which might permit some people to concentrate exclusively on cash crop production. Problems of a lack of technical knowledge and equipment are intensified in situations where cash and subsistence cropping are pursued simultaneously. The essential homogeneity of the village remains therefore largely unimpaired. [178] The nature of the people's contacts with the external economy and the expatriate community only serves to reinforce it. These contacts are few and tend to be formal and innovations only permeate through with difficulty. Villages tend to be isolated from the main centres of expatriate activity and, in consequence, people find it difficult to participate in those cash-producing activities, such as wage labour, which provide a regular source of income. The basic functional discontinuity between Orokaiva village and expatriate settlement tends to sustain a situation where money is used primarily to exchange 'exports' for 'imports' and has little impact on the rest of the village economy; while the apparent control which expatriates exercise over all successful economic diversification and other developments tends to discourage initiative within the village.

The problem of stabilising the world market situation for cash crops, or at least of cushioning the producer from the price fluctuations, cannot easily be resolved, but some of the other problems are amenable to direct intervention.[1] Given their long and mixed [179]

[1] As exemplified by the apparent success of the Ombi-Tara scheme (see Morawetz 1967).

433 experiences with cash cropping such intervention is urgently required among the Orokaiva.

Village life cannot yet be characterised as a 'culture of poverty' in the sense that Lewis (1966) conceives the term or Watters (1967) has applied it. Unlike the Venezuelan campesino the Orokaiva seldom express the 'attitudes of hopelessness, helplessness and resignation that are so inimical to the spirit of enterprise and innovation that is so desperately needed if traditional agriculture is to be transformed, and the modern world ushered in' (Watters 1967:40:1). As this study has shown, Orokaiva villagers are still actively experimenting with cash crops and with new forms of organisation. Despite their past experiences and the scepticism which frequently plagues current attempts, many are willing to work hard and they still seek the 'road' to prosperity. It is evident that if this 'road' is to be found it requires something more radical than the encouragement of limited cash cropping by subsistence farmers. As a prerequisite for real progress there must be a thorough-going reappraisal of the whole village economy and its place in the wider, national economy.

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Summary of conclusions

While the foregoing study was concerned specifically with investigating certain aspects of the relationship between cash and subsistence cropping, the data gathered are relevant to a much wider field. The main conclusions are therefore summarised here to suggest some of the broader theoretical implications of the data. It is the authors' intention that some of these wider themes will be dealt with in later papers.

The conclusions fall into two general groups - specific statements of fact founded directly on the data, and evaluations which are derived from this factual information. No distinction is drawn between the two in this summary and the listing follows the order in which they fall within the text.

1. A very high proportion of the potential adult male labour force is absent from Sivepe (but not Inonda), while dependents are supported by close kin in the village (pp.37, 53).

2. While there have been significant reductions in the total cultivated areas since the previous surveys, acreages under yams and Xanthosoma have increased substantially (pp.41-4).

3. There have been a number of attempts recently to expand cash cropping activities, both on individual and communal bases, but with little success (pp.44-5, 59-60). Even copra production ceased in Inonda during 1967 due to insufficient trees in excess of subsistence requirements (Oriri: personal communication).

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point at Ononda bridge. Production details for the two occasions observed are given in Table 1.

Table 1

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Yega Scheme cocoa production and growers' income on two occasions

Name	Picking of 1 July 1964				Picking of 29 July 1964			
	Picking	Pods*	Net wt. lbs.	Amount received $	Picking	Pods*	Net wt. lbs.	Amount received $
Wilfred	3rd	86	16	0.40	4th	?	5	0.12
Timothy	3rd	810	143	3.58				
Dick Shepherd	3rd	519	116	2.90	4th	400	103	2.58
Ethelbert	2nd	205	45	1.12				
Livingstone	2nd	408	79	2.08				
Spencer	2nd	136	30	0.75				
Wilson	1st	123	21	0.52	2nd	34	3	0.08
Needham	1st	96	16	0.40				
Reginald	1st	62	18	0.45				
Roy	1st	14	3	0.08				
Geoffrey	1st	60	12	0.30				
Randolph	1st	36	8	0.20				
Hubert Murray	1st	176	30	0.75				
John Livingstone					3rd	?	50	1.25
Bruce**					?	250	56	1.40
Aubrey					3rd	103	27	0.68
Faithful					4th	410	83	2.08
Devhurst					1st	50	9	0.22
Total		2,731	537	13.53		1,247	336	8.41

*Average 100 pods for 21 lbs wet beans; average beans per pod is 31 (count of 13 pods selected at random).
**Bapa man, not member of Yega Scheme.

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Incentives and income distribution

The Yega Scheme provided the middle-aged men in particular with an opportunity to increase their incomes. The younger Yega men working for wages away from the village were not attracted back home by the prospects of cash crop planting. Only one unmarried man left his job (in the police force) to return home and obtain a block in the scheme.

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(423)

(iv) the strong desire of individual members of extended families each to have personal control of a piece of land and of useful trees on that land.

The aspects which had little precedent in traditional custom were

(i) the systematic layout of blocks;

(433) (ii) the production of crops for sale;

(242) (iii) the supervision and guidance of Agricultural Extension officers and workers, most of whom had no kinship ties with the Yega;

(361) (iv) the provision for the location of a blockholder's dwelling on the block itself rather than in a village.

The value of the Yega Scheme is this combination of old and new which was achieved by basing the scheme on traditional precedents in so far as they were appropriate and incorporating innovations where necessary. The main innovations were organizational and technological - involving new crops, new husbandry techniques, new processing methods and equipment. There was an increase in some forms of group activity, for example bush clearing by all the Yega (whereas bush clearing was traditionally carried out by sub-clan groups), and the proposed co-operative fermentary and marketing facilities. On the other hand, a greater dispersal of residence and the adoption of new mores were responsible for some diminution of traditional forms of group activity. In pre-contact times the family was the basic unit for garden work but larger groups formed for other activities. With the addition of cash crops, agricultural work took more time and many of the larger groups for fishing and social activities atrophied.

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The rights of the individual in cash cropping land will become more marked in relation to those of the sub-clan and tribe. Whereas food gardens were held by individuals or small descent groups and rights at this level were flexible due to rapid demographic changes and the system of land rotation, cocoa is a relatively permanent crop and the planter is associated all his life with the land on which the trees are planted. With change in the legal status of the land the rights of the social group to the cash crop lands are certain to diminish in favour of individual rights.

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The new pattern of residence, showing tendencies towards 'ribbon' development and particularly towards the dispersal of homesteads, varied markedly from the traditional form. Most significant of all variations from tradition was the location of homesteads by individuals on potential extensions to their cocoa blocks. With the registration of individual title to these lands it seems likely that this trend will continue. If the trend towards dispersion

Buna. The registering officer stated that 'the co-operative movement in this district is the only one yet far enough advanced for registration'.[1]

About this time, discussions were held between Rev. Clint and the local agricultural officers regarding the practicability of planting tree crops - especially coffee and cocoa - as eventual replacements for the annual crops then being grown. The problems associated with the establishment of these tree crops were not solved, however.[2] Had they been solved, a serious difference of opinion regarding policy would have been avoided. The divergence of views was between Rev. Clint, who saw the production of rice by co-operative methods mainly as a way of improving the subsistence diet of the people, and the people themselves, who saw it as a way of earning money. As time went on, it appeared to the villagers that Rev. Clint's interests lay only in subsistence crops and their enthusiasm began to wane. Towards the end of 1949 Rev. Clint became ill and he had to return permanently to Australia in January 1950.

In Rev. Clint's view Christian co-operatives had 'grown naturally out of the teachings of the Christian faith' (Clint 1950). Unfortunately he did not recognise that material considerations weighed at least as heavily as spiritual values in the minds of the people among whom he was working. The people had readily accepted a departure from the traditional practices of land tenure, an entirely different system of work organization; and the cultivation of a new crop, rice, which involved radical changes in their gardening techniques. The Yega, anticipating a substantial cash income, had welcomed these changes, but soon discovered that rice could not be converted readily to cash. There was no possibility of rice being grown in sufficient quantity in any one locality (for reasons of land availability and manpower) to justify the establishment of central milling facilities, and inadequate transport facilities prevented combination with other areas, even had these existed at that time. Without central milling, which would have produced a brown rice, properly dried, and saleable to the Administration and plantations, the only means of converting 'paddy' rice into a storable product was to use smaller semi-portable mills to produce white or polished rice. The milling, however, whilst converting

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[1] Quoted in the Gona Anglican Mission Diary.

[2] Specifically, lack of knowledge of the soils in the area, lack of any experimental plantings, and a shortage of trained staff.

many of whom moved their place of residence some three to five miles inland from the coastal villages along the Gona-Popondetta road during 1963-4, bringing them nearer to the larger Popondetta stores (see preceding article in this bulletin).

The rate of spending was remarkably constant throughout 1962 (the only year checked) except in December when 16 per cent of annual turnover was handled. Other months accounted for 6 per cent to 9 per cent of the annual turnover. The high figure for December was partly due to a shareholders' rebate being distributed on 12 December. Much of the money given in rebates was seen by the author to be immediately spent again in the store. Also, many men who worked outside the village returned for holidays at Christmas time with appreciable sums of money. Finally, the European custom of holding Christmas parties had been adopted by the Yega, resulting in increased spending on food.

The Yega were still predominantly subsistence cultivators with very limited financial resources. The co-operative store served a useful purpose in providing them with easily preservable proteins as well as a range of other foods, clothing, consumer goods, tools and domestic equipment.

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Table 4

Inonda coffee production(1)

Year	Household No.	Weight (lbs. parchment coffee)	Price per lb.	Value
1960	1	242	1/2 and 1/3	£14.13. 4
	3	61(2)	" "	3.14. 4
	4	103(3)	" "	6. 3.11
	Total	406		24.11. 7
1961	1	246	1/-	12. 6. 0
	3	76	1/-	3.16. 0
	4	24	1/-	1. 4. 0
	Total	346		17. 6. 0
1962 (to Aug.)	1		1/-	6. 0. 0
	3		1/-	3. 0. 0
	4		1/-	4. 0. 0
	Total			£13. 0. 0

(1) Details of sales were obtained from receipts issued to producers by the Orokaiva Coffee Growers Society (for sales in 1962) and by the Department of Agriculture (for sales in 1960-1). Information for 1960 and 1961 is probably complete (except for sales from household 4 for 1961). Figures for 1962 include producers' estimates of the value of coffee they harvested during the first eight months of the year.

(2) Part of this coffee was sold by the brother of the head of household 3.

(3) Part of this coffee was sold by the step-father of the head of household 4.

121 ambitious men could be resettled on individual holdings outside Inonda. There is no indication that freehold tenure within Inonda would facilitate improved productivity any more than the Higaturu Council registration scheme.

[241 495] It is apparent that the highest productivity per man and per acre at present is achieved on the large-scale European plantations and the individual family holdings for Papuans, both of which are financed largely by government loans. The degree to which developments of this type can be extended is limited in practice by the volume of funds available from or through government agencies. The comparative productivity of these two forms of organization is now being analysed and it is hoped that the results will be available in the next few months.(1)

It is likely that at this stage only a few Inonda men would be suitable for resettlement on individual blocks, with development loans, but a number would be both suitable and willing to work as plantation labour. The feasibility of encouraging the ownership of plantations by Papuans seems to merit exploration, for experience elsewhere in the Pacific in recent years suggests that in conjunction with expansion of cash cropping by individuals or families, plantation agriculture operated by indigenous entrepreneurs may provide an important avenue to increased output from commercial agriculture.

(1) A paper on the Popondetta plantation economy is in the course of preparation by Dr. Diane Howlett and another on the government-sponsored family holdings by Mr. R.J. Cheetham. Both will appear in subsequent issues of this Bulletin.

657 productivity. Consolidation of an individual's scattered plots
423 reduces the amount of time devoted to travelling and increases the
182 acreage which can be planted with cash crops in any one location.
241 The road running through the converted area allows easy access to all holdings and facilitates interpersonal co-operation by reducing the amount of travelling time involved.

657 Consolidation has facilitated the provision of assistance by
423 Department of Agriculture staff, increasing the effectiveness of
182 officers. Planting, pest control and general crop maintenance can
242 be more efficiently supervised where there is easy access to all holdings.

Increased assistance from the Department of Agriculture has been an extremely significant factor in the increase in cash cropping activity at Ombi-Tara. In the Northern District there are more agricultural extension officers per head of local population than in most areas in Papua-New Guinea.[1] The diligence, patience, and understanding of the Agricultural Officer who initiated the conversion scheme, the stationing of an Agricultural Assistant full time at Ombi-Tara to supervise the rubber nursery and the bush rubber processing unit, and the regular visits of extension officers from Popondetta have helped to provide the essential technical and managerial skills which are lacking in the village situation.

657 Tenure conversion appears likely to enable economies of scale
423 when the rubber trees come into production, hence increasing the
182 productivity of village labour. Economies may be gained in pro-
433 cessing the latex, since the relatively large output may warrant the introduction of larger and more efficient processing equipment; in transporting the processed rubber in bulk; and in marketing. One of the problems previously faced by Ombi-Tara cocoa producers, especially when prices were low, was that buyers did not consider it worthwhile to make the journey to Ombi-Tara from Popondetta for the relatively small amount of produce.[2]

While conversion introduces economies of large scale production it also retains one of the better features of the small holding system, the maintenance of individual incentives to increase production.

Ombi-Tara experience appears to support the well-known maxim of the Food and Agriculture Organization that tenure reform, in order

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[1] The principle of concentration of development effort was endorsed by the visiting World Bank mission (International Bank for Reconstruction and Development 1965:35).

[2] The argument for increasing returns to labour in an economy moving from pure subsistence to the production of a market surplus has been stated by Fisk 1964:164.

657 to be effective, must be associated with improvements in technical
423 skills and the provision of credit, transport and marketing facili-
182 ties. That individualisation of tenure does not necessarily lead
433 to improvements in productivity has been demonstrated in many areas including South Africa (Yudelman 1965:239), Ongoho in the Northern District of Papua (Crocombe 1964a:36), and the Cook Islands, where Crocombe (1964b:142) concluded that

> the issue of registered freehold titles by the Land Court of itself made little if any contribution to output in the early decades of the century and of recent years has had a negative effect.... Security of tenure must also be complemented by other measures if major increases in productivity are to result.

Tenure conversion at Ombi-Tara has enabled labour inputs in the establishment and maintenance of the rubber plantations to be reduced and appears likely to lead to economies of scale when the trees come into production. Conversion has facilitated, and has been complemented by, increased agricultural assistance. These factors together have contributed to the increase in cash cropping activity and improved labour productivity at Ombi-Tara.

657 423 (iii) As was the case before conversion, a man whose crops stand on another man's land retains his rights to those crops (in the local view, but not in law).

[425] (iv) As was the case before conversion, each man is considered by the villagers (but not in law) to have the right to extend his planting behind his present holding without consulting the clan leader or other members of the clan.

(v) It remains to be seen whether all villagers fully understand that all previously existing rights to land have been abolished since conversion, and whether in future some people may make claims on the basis of such rights.

[361] [198] (vi) Residence patterns appear also to be in accordance with traditional custom as those people who have left the village are living in hamlets composed of kinship groups and not as single farmers each on his own block.

Promotion of agricultural development

657 423 182 433 Even if tenure conversion alters the tenure system less radically than expected, it is still possible that it may act as a stimulus to indigenous agricultural development. The acreage under cash crops and labour productivity has increased at Ombi-Tara since tenure conversion was introduced. The improvement seems to be due more to the benefits arising from the consolidation of fragmented holdings than to increased security of tenure since the land rights that Ombi-Tara people held before conversion were sufficiently secure to allow them to plant cash crops.

Consolidation of holdings has reduced the labour inputs required to establish cash crop gardens by reducing the time spent travelling between the village and food and cash crop plots. Whereas previously each man had relatively small areas of land on each plot, making extension of plantings difficult, all his land has now been brought together on one twenty acre block. The provision of easy access to all blocks has facilitated interpersonal co-operation particularly in clearing bush lands, and has enabled officers of the Department of Agriculture to supervise planting, pest control and general crop maintenance more efficiently. This increased assistance from the Department of Agriculture has played an important role in increasing the acreage under cash crops by providing essential technical and managerial skills. It is questionable whether conversion would have led to a greatly improved cash cropping performance if it were not accompanied by increased agricultural assistance.

Tenure conversion appears likely to enable economies of scale to be gained in processing, transporting and marketing of produce when the Ombi-Tara rubber trees come into production, thereby increasing labour productivity still further.

18: Dakeyne K-5 (1962-1964) 1969
OJ23 Orokaiva OJ23
Yega

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[Housewife carrying garden produce and firewood back to her village, a distance of up to four miles. Her load, excluding baby, is about 100 pounds.]

INTRODUCTION

433 THE traditional economy of New Guinea villages was radically different from our own. Whilst our economy is based upon the production of surplus goods which can be sold for profit, thus providing capital which in turn may be invested to produce greater profits, the key note of the New Guinea economy was 433 self-sufficiency. Traditionally, the people of 24 New Guinea were subsistence cultivators planting 226 their food crops in small clearings in the 224 forests and supplementing this food supply by 222 fishing, by hunting the animals which live in the forests and on the grasslands and by gathering the edible produce of wild vegetation, notably sago. Only the simplest implements 412 were available: stone axes with which trees 392 could be laboriously felled or ring-barked; fire for burning-off the mass of felled timber, vines, and leaves; and sharpened sticks with which holes were made for planting seeds and cuttings. In only a few limited areas, notably the central highlands of the main island, was there any attempt at digging or cultivating the soil prior to planting; in most areas cuttings or seeds were planted in holes made directly in the cleared, ash-covered ground. 128 The burned clearing thus made and used for the growing of food crops is referred to in this book as a swidden.

433 Such an economy, in which there was no 24 concept of saving and no profit motive, tended 177 to be resistant to change; innovation was un- 412 necessary. But with the coming of white men possessing a superior technology, an important change occurred; steel axes, knives, and spades

433 were introduced. The use of these tools has
241 greatly lightened the work of the New Guinea
172 gardener and substantially reduced the time
412 needed to produce his vegetable foods. Thus time was available, when the incentive was supplied, to produce crops which could be sold for cash.

241 The introduction of new tools has not, how-
242 ever, had any marked effect upon the methods by which a New Guinea villager produces his food crops. Long ago he discovered by experience what agriculturalists have later discovered scientifically, that tropical soils when exposed to the sun and rain very rapidly lose their plant nutrient content (particularly nitrogen) and without the addition of fertilizer they will not sustain crop yields. In order then to make the most efficient use of cleared land, the villager plants his swidden with a variety of food crops, mainly tubers, which, maturing at different rates, help to maintain a constant food supply. Swiddens are usually abandoned after twelve to eighteen months and allowed to return to forest. Meanwhile new clearings are made and crops planted to ensure continuity. Forest is allowed to regenerate on old swidden sites for a period of five to twenty years depending on the population density and consequent pressure upon the land. Provided that the forest cover is left for about ten years between periods of cultivation, soil deterioration does not usually occur. Under this system of land
241 use, which can best be described as one of
242 shifting-field agriculture, the average land requirement is a quarter of an acre per head per
311 (P.1-B)

241 242 317 year. Thus, over a ten-year land-rotation cycle, approximately two and a half acres of land are required to support one person.

241 433 177 [437] The major change that has occurred in New Guinea agriculture with the coming of white men has been the introduction of cash crops. When Europeans first arrived they found a subsistence economy. Some trade was conducted but it was almost entirely by barter and was confined in the main to items of ceremonial value, shell and feather ornaments and the like. The early administrators, both British and German, were faced with the problem of rapidly easing the financial burdens their colonies imposed on the mother countries. The only readily apparent way to do this was to encourage the production and export of copra, the dehydrated meat of mature coconuts which grew prolifically in all coastal areas. Accordingly villagers were encouraged to produce and sell copra to itinerant traders; this village or 'trade' copra was the mainstay of the colonial economy for many years until production from large scale plantations was built up. First coconuts, then rubber, coffee, and cocoa and latterly tea and pyrethrum were grown on plantations owned and managed by white men who directed gangs of indigenous labourers in the tedious tasks of keeping the jungle at bay and processing the crops. Since 1950, Administration policy has changed in favour of encouraging the production of tree crops by indigenous growers on small plots of village land or, in certain areas, on small plantations of ten to forty acres. This policy has brought into sharp focus the difference between our land ownership system and that of the New Guineans.

423 Flying over New Guinea and looking down on vast areas of trees or grassland, with no apparent occupants apart from an occasional village, one may be tempted to think that there is a great deal of vacant or unclaimed land. This would be erroneous. Some indigene claims rights to every square foot of land under 7,000 feet and to much of the higher land as well; in many areas the rights claimed by one man are disputed by several others.

The European concept of individual land ownership must be discarded when considering New Guinea custom. Similarly the phrase

[P.2-A]

No male member of a Yega clan has any rights whatsoever to land outside the consolidated block of parish territory. All Nasioi, on the other hand, are members of widely dispersed matrilineal clans. Many of them, both men and women, have rights to cultivate land far from their village of residence. For a Nasioi, the focus of loyalty is not the clan as a whole but the small segment of it with which he (or she) is intimately associated, in the parish where he lives.

The degree to which contact with Europeans has affected each group differs greatly. The Northern District of Papua where the Yega live is the scene of recent rapid development in cocoa planting by both Europeans on large plantations and by indigenes on small-holdings. The Yega are a relatively well-educated group of people but they have a record of failure in the production of cash crops. Many of the younger Yega have therefore left the parish territory to work for wages in skilled and semi-skilled jobs in the towns. Fewer Nasioi go to work in the towns but many have worked locally as plantation labourers. Recently copper has been discovered within their territory and now many men work for the mining company which offers higher

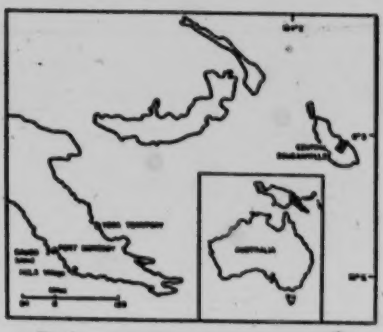

Fig. 1. Location of the three case studies

361 The new village sites also reduced walking time to the gardens.

618 722 The war of 1939-1945 affected the Yega in several important ways. Their territory became one of the major battlefields of the Pacific War. Every person migrated from the area with the exception of one old crippled woman who somehow managed to survive for eighteen months in the bush. Almost all able-bodied men served in the army or labour corps and the women and children lived at another Anglican mission about thirty miles to the north. When they returned, they found all buildings, and any belongings that they had left behind, destroyed and most of their coconut palms cut down or damaged by gunfire. There were some compensations. The Australian Government paid thousands of dollars in war-damage compensation for all trees and property but, more important, the stimulus of travel, and meeting and working with Australian and American soldiers, gave the younger men in particular a broader view of life which triggered off changes in their traditional economy. In addition, the transfer of the Administrative headquarters from Buna to Higaturu resulted in the construction of a major road to the port of Cape Killerton and brought the Yega into closer touch with the outside world than ever before. As a result, between 1945 and 1950, about twenty families left their re-built villages and moved east to found the new village of Surilai at Cape Killerton (Fig. 9). Men living at Surilai have since found regular employment on the Government wharf at Cape Killerton.

618 701 722 727 729 659 199 199 491 361 166 [464]

178 433 464 466 Major post-war changes in the Yega economy have resulted from their attempts to increase their cash earnings. Before the war many men worked as indentured labourers on plantations or on the wharves at Port Moresby

[P. 13-A] [TEXT CONTINUED ON PAGE 14]

and Samarai. They were away from home for two years at a time and were not accompanied by their wives and children. Since the war they have not returned to indentured labour but have tried other ways of earning money.

The first such experiment was an agricultural co-operative, originated by a returned soldier who got the idea from one of his wartime Australian friends. Anglican Missionaries sponsored and directed the scheme and some money was made from cash crops of sweet potatoes, peanuts, and rice. However, when the money was shared amongst all those participating, it was a very small return for the amount of work and there was widespread dissatisfaction. The scheme was finally doomed to failure by two events—the permanent return to Australia of the mission organiser in January 1950, and the death of the Yega leader in the Mt Lamington volcanic eruption in

[P.14-B]

245 By a fortuitous circumstance, the land selec-
423 ted was regarded by all Yega as communal
hunting land. It had belonged in the past to
[614] the Bowori clan, but when they were wiped
[726] out in inter-parish warfare it had never been
re-allocated among the remaining clans. No-
body, therefore, had to be compensated for
245 the loss. The Yega followed the DAO's advice
654 and over the next two years cut down a large
657 area of forest and planted shade trees and
young cocoa. In order to supervise this work,
the Agriculture Department built a small
village at Ononda to house a field instructor
and a group of trainees.

245 Many people came to believe that their
433 future prosperity lay in the development of
cash cropping. As the cocoa blocks were a long
361 walk (four miles) from their homes in Beporo
245 village, many decided to move inland; this
was a rational decision. An additional incen-
[484] tive was the development of the weekly market
[443] at Popondetta. With the rapid growth of the
town since 1960 there has been an increasing
361 demand for fresh fruit and vegetables. Many
443 Yega have taken advantage of this to sell sur-
438 plus produce for cash. Residence in the inland
settlements reduces the distance from the mar-
ket. By 1964, over half the population was
living in the new villages.

361 In addition to the dispersal of population,
178 the breakdown of traditional clan groupings
614 continued. The inland settlements are all
numerically smaller than Beporo and in all of
them the old homogeneity of clan membership
has disappeared. A man chose his house site
for convenience and access to his place of
work, rather than on the basis of his kinship
ties.

361 The most radical change occurred in the
establishment of Binjapada village. It is a
collection of fourteen households, spread for
over half a mile, along a narrow strip of grass-
361 land. Six of the occupants had been allocated
423 cocoa blocks in the near vicinity and four of
these men attempted to locate their houses on
the projected extensions of their cocoa blocks;
this represents the beginning of a dispersed
pattern of settlement foreign to the Yega tradi-
tion of clan-based clusters of dwellings. As no
boundary surveys were carried out, one man
located his house on his neighbour's block.
[P. 15-B]

361 He has now cleared bush and planted gardens
423 all round and claims, by right of usage, a much larger area than was originally allocated to him. The establishment of freehold title must reinforce dispersal, so it is significant that in August 1964 seventeen Yega cocoa-block holders were among the first people in New Guinea to apply for freehold title. The parish elders did not oppose these applications.

245 Yega expectations in cocoa plantings as a
458 source of cash income have not been fulfilled. The trees began to bear in mid-1964, at a time when, unfortunately, the world market was
[439] depressed. Growers received only three cents per pound for wet beans from a European-managed fermentary near Popondetta; by mid-1965 the price had fallen even lower, to two
245 cents per pound. The discouraging effect of
433 such prices was reflected in the low production of cocoa during the latter half of 1966, when forty-eight growers produced only 1,866 pounds of wet beans valued at $74.64, an average of under $2 per head. By January 1967, the well-cared for plantations of 1964 looked overgrown and neglected and it was obvious that apathy had replaced the early enthusiasm.

245 The Yega cocoa-growing scheme outlined
178 above well illustrates the conflicting traditional and modern socio-economic attitudes commonly found in New Guinea today. Traditional aspects are:

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[476] a) The use of communal labour to clear the rain forest and the subdivision of the area among those who helped.

b) The absence of any documentary record of the transference of cultivation rights to individuals.

c) The organization of group labour for certain tasks—individual right-holders to cocoa blocks were assisted by their kin in tasks such as cutting grass and opening the cocoa pods—and the subsequent obligation on the right-holder to repay such work by sharing his profits.

d) Personal control by each individual of the economic trees which he planted on his block.

245 Aspects which have little precedent in tradi-
177 tional custom but result rather from the acceptance of new principles are:

a) The systematic layout of blocks.

[P.16-A]

devote less time to the cultivation of the more laborious (but more favoured) Colocasia taro.

During the post-eruption period there have been, as we shall see below, many pressures on the Orokaiva to reallocate their working time, by raising the standard of village building construction, by taking on outside labour to raise taxes and buy luxuries, by increasing the acreage in cash crops. In many cultures dependent on swidden agriculture these pressures have led to more slipshod methods of cultivation, or smaller plantings or shorter fallowing periods. Among the Orokaiva, the only effect so far has been, in all probability, a decline in the surpluses grown for feasts. This is a change to be discussed later and related to religious changes. In Sivepa there would clearly be a danger, if cash-cropping was expanded to the extent some administration officers would like to see, that fallowing periods in subsistence gardens would need to be shortened. There is no evidence that subsistence gardening, so far, has been affected by cash cropping, as both the acreage and the time devoted to cash crops is too small. (For details of time allocation to activities in both villages, see Table 8.)

The average Sivepa family, according to Rimoldi, has 62 cultivated trees of local origin from which crops are gathered in season. No corresponding figure is available for Inonda, but it would be about 30. The list of most important trees varies a little between the two districts because of differences of climate and soil.

Sivepa	Inonda
Coconut	Sago
Breadfruit (oga and sumba)	Coconut
Betelnut (areca)	Betelnut
Sago	Hauga nut (tauga)
Pandanus	Breadfruit
Tauga nut (cycas media)	Pandanus
Puga nut (terminalia okaria)	(Ajimo)
Bark cloth tree (ajimo)	
Mango	

An important difference between the resources of the two villages is that coconuts at Inonda will yield copra; hence, a copra drying house was built and this has been and can be a source of income. At Sivepa, the flesh is thinner and coconuts are grown for drinking, cooking, feeding dogs and chickens, while the nuts are also eaten regularly and form a useful source of protein. Another difference is that neither betelnut nor tauga and puga do well at all in the Inonda district and quantities are negligible. The lack of betelnuts is felt very strongly, as the Inonda people are as fond of chewing it as other Orokaiva. Hence, it is usually obtained

A [See Cat. 116, p. 213--Analyst]

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Capital goods, though few, should be briefly mentioned. Apart from a house and his clothing, the average man owns very little. The sum of his possessions make a very small pile: a bush knife and two or three implements, some kitchen utensils, a small box of feathers and ornaments, usually carefully locked, perhaps a few dollars of savings, and--in both Inonda and Sivepe--an interest in a coffee-hulling machine presented by an anthropologist. About half the people have a storm lantern; two Sivepe men had a pressure lamp, lit on weighty occasions only. With the exception of the valuables, these capital goods are innovations; at the time of the eruption people had far fewer, and these were mostly acquired after the second world war or from American soldiers.

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Comparing the development of Sivepe and Inonda over the last 15 years, we note several significant differences in the exploitation of resources: Sivepe, but not Inonda, has rapidly expanded its coffee production in the 1960's; Sivepe but not Inonda is deriving a significant cash income from "looking after" the wives of migrants. I have referred to several other differences, but these seem to me the most significant, as they do not appear to me to follow directly from ecological differences.

Section 2: Economic Assistance

177 Subsistence: Undoubtedly, European contact had a profound influence
433 on the subsistence economy, both through the introduction of steel
tools and of the pax Australiana. The government did not, however,
intervene directly in the operation of the Orokaiva subsistence
economy; it was a very simple economy, but it provided, in general,
adequate nutrition and housing. The first time the Orokaiva subsistence
731 economy broke down seriously in the post-contact period was immediately
657 after the eruption of Mount Lamington. The government therefore decided
to offer some limited assistance towards the re-establishment of the
subsistence economy in the resettlement villages built when the
refugees left the evacuation camps. One requirement of the new villages
was a food supply until new gardens had been made and harvested. This
[241] requirement was met by the planting of a quick-growing variety of sweet
potato in villages in the vicinity of Ilimo camp. The government also
bought up any root crops the Orokaiva could supply and distributed
these in the resettlement villages throughout 1951, as needed.

The opportunity offered by the evacuation camps was also taken
731 to introduce a few innovations which, it was thought, would improve
242 subsistence gardening in the resettlement villages. People were taught
the cultivation of the variety of sweet potatoes mentioned above, as
well as of corn, tomatoes and beans. Seeds and plants were supplied.
An agricultural officer demonstrated on a large scale the growing of
[412] sweet potatoes and peanuts. In order to facilitate the rapid establish-
ment of gardens--which the government hoped would be bigger and better
than the pre-eruption ones--small spades were distributed to villages.
These small spades were not a familiar implement to the Orokaiva, but
the agricultural officers thought they would be more efficient than
the wooden implements and large shovels hitherto used in villages.
These small spades cannot have taken on very well; I saw none in Sivepe
or Inonda. I myself had brought a spade for the garden I established
in Sivepe, but my neighbour, upon seeing it, at once supplied me with a
grubber (ex-American army stock). A very brief acquaintance with the
root structure of the garden weeds convinced me that a spade was indeed
[229] of limited utility. Finally, in order to add to the supply of protein
in the resettlement villages, the camp superintendent distributed some
snorkels for catching fish.

Keesing reports there were fears in the camp that the eruption
731 would have destroyed taro seed stock, but this fear proved unfounded.
134 The taro plants remained perfectly healthy and the volcanic ash made
the soil amazingly fertile for awhile, so that food shortages were
quickly relieved.

Issue of Food: In the camps, rice, tinned meat, tobacco were distributed
731 according to a ration scheme based on the census figures. Each village
659 constable was issued with rations for the number of people resident in
the villages under his control. These distributions were continued in

further such lucrative young females. Of the six, two were Sivepe women while the other four were women from other villages residing virilocally. A great many other families did not derive income in this way. Some of these, however, had daughters living in other villages, and their husbands too were sources of institutionalised gifts.

Though Waddell showed that the loss of adult male workers through migration is already serious (37.8% in Sivepe and 25% in Inonda), the point had not been reached when the loss of manpower led to a decline in the production from garden lands. Waddell may, however, be right in ascribing the increasing consumption of the inferior Xantosoma taro (see page 35 above) to the deflection of the adult male labour force which had to support old people whose vigour had declined. The older men did not stop work abruptly at a certain age; they would continue to go to their gardens, but the areas cultivated would become smaller; their children or young affines would help them. If an old man became widowed his daughter or daughter-in-law would cook food for him; in the case of a widow, uncooked food might be given, but most widows tend to live in a house where there are male relatives, the only two exceptions in the sample being the two widows who stayed in the old village of Sivepe. There are also activities which are a specialty of the old: they tend to be the village artists and also the village sorcerers. When we wanted to buy artifacts, it was the old men who made the ornaments, the old women who made the best pots and painted the best bark-cloth. Similarly, the most active curers in the village were two old men and one old woman.

I saw no evidence of polygamy currently practised. Marriages were always consecrated at the time the couple was baptised. Several people had at one time been divorced, but this was prior to the time of baptism.

In Inonda, as I wrote earlier, no absent husbands sent money home. The only woman at Inonda whose husband was away from the village was in jail, after breaking into a trade store with a hammer belonging to another man from Inonda. On the other hand, one man earned a living as a government driver, thus becoming more or less removed from the work in his subsistence and coffee gardens. Some other men took over his work, in return for appropriate counter gifts and services. In both villages, therefore, a pattern existed of outside earnings derived by a limited number of people whose garden work was taken over by other members of the village labour pool, while the money earnings were in one way or another widely shared among villagers.

Section 2: Division of Labour

The division of labour was the special subject of a study carried out in Sivepe by my predecessor, Mr. Waddell. As he has been

A [See Cat. 116--Analyst]

groups, and I shall return to this aspect. In addition, however, a considerable weight is placed upon the difference between individual dispositions. I would suggest that in this respect, Mr. Waddell may have put too much confidence in the results of a synchronic study and it is fortunate that another investigator (myself) was able to observe the community at a time when coffee growing had become a general activity. Regrettably, I did not collect quantitative data of the same scope as Mr. Waddell.

I shall anticipate later chapters by suggesting here, that differences in level of acculturation in Sivepa never go very deep. Certainly, it is always the same minority of relatively acculturated people who are willing to risk making innovations. This applies to the introduction of European styles of clothing, of radios, kerosene lamps, sending children to school regularly, being baptised, building lavatories and also to the growing of coffee and the planting of the improved Malayan rubber trees. All these things are always done first by a few pioneers, and usually the same pioneers. The basis upon which these people become pioneers is usually a relatively shallow contact with western civilisation. Mostly, the new skills, activities and other introductions they sponsor are not so far ahead of the rest of the community that a swing of local fashion cannot make them universal or almost universal properties. There was no evidence of a widening social and economic gap between acculturated and unacculturated families; there was a gap, but it always remained small (at least, so far). The pioneers tried innovations; the conservatives held back until they saw the innovations succeed, as happened by no means always. Then, one, two or five years later, the conservatives followed the progressives. Thus, the activity pattern Waddell observed among the progressives is now much closer to the general norm. The people themselves feel sure that today they work harder and rest less than they used to do. The rest periods I observed were shorter than those measured by Waddell in 1964.

Nonetheless, I would support his main contention that the work day of the cash-croppers of Sivepa today cannot be greatly lengthened, nor productivity greatly increased, unless ways can be found to make work more efficient by technological and other innovations. I have already suggested that a degree of collectivisation would permit the introduction of some labour-saving machinery and better transport facilities. Mr. Waddell makes two further suggestions which need brief discussion.

The first of these is interesting because it questions an assumption that has been almost universally accepted in the literature on shifting cultivation. He argues that the shift from Old to New Sivepa did not actually reduce travelling time from village to garden but in fact lengthened it. He quotes detailed figures to prove this. Village locations, therefore, are not actually being chosen by Orokaiva by criteria of economic rationality, but on wholly non-economic grounds. If this were true, we would need to re-examine whether other societies

433 of shifting cultivators actually do shift their villages to save time
461 as previous investigators have believed: perhaps, we need to look
241 for entirely different motivations.
114 The question is an interesting one, but Sivepo does not
[489] provide a clinching counter-instance. Mr. Waddell's sample was taken
[423] entirely from the Jegase and Timunu clans, while he did not collect data on travelling time from the Seho clan. Now it is the latter clan which owns most of the land around New Sivepo, so that their travelling time is (at least for most families) substantially reduced by the shift. Furthermore, five of the Jegase households (some of which were formerly called Timunu) now have gardens very close to New Sivepo. The main sufferers appear to be two families who migrated from Binduta recently, whose land is mainly close to Binduta, and against whom feeling has been building up over the last few years. Mr. Waddell is right, however, in stressing that the major reason for the shift (as given by informants) was the closeness of the new village to the road and the mission station. As such the basis of the shift was practical and ideological but I believe that overall travelling time was reduced if both Seho and Jegase clans are taken into account. Certainly the new village is very close to the land of most of the Sorovi people who settled in Sivepo in 1966.

The second suggestion made by Waddell is that travelling time could be reduced, and thus working efficiency increased by land tenure conversion. He has in mind, I think, the arrangement already found in Papuan returned servicemen's settlements established by the government: where each individual family is settled on its own 20-acre block and grows cocoa and subsistence crops there. Conceivably, when tenure conversion is completed, the Orokaiva might be encouraged to live on individual farm holdings rather than in compact villages. Some planners in the Territory are actually playing with this idea. It has many drawbacks, however: distance from roads, from schools, collapse of social control institutions, abandonment of useful social development projects such as the provision of good water supplies in the resettlement villages.

Comparison with Inonda suggests that as the proportion of adult males lost through migration from Inonda is smaller, and none of these males have left dependents in the village, and furthermore, as the amount of cash cropping work is relatively smaller, the Inonda people are less pressed for time than those of Sivepo. This is borne out by the fact that they are away from the village more frequently as Waddell's statistics show.

An interesting discovery made by Waddell concerns the time
14 allocation of the elderly. He shows that in adulthood the amount of
887 productive work done decreases with age, as does also the amount of time spent on productive work, but the amount of time devoted to social activities and contacts outside the village declines even more steeply after middle age. The Orokaiva has no leisurely old age. Unlike the
[888] Polynesian elder he does not become a sage, remote from economic

621 station. The Horeopa leader, who was the owner of this land, then
361 invited these other clans to come over and make Hohorita into one
united big village. When the clans came over in 1959, they followed
the same pattern as the Sorovi immigrants followed in Sivepe: they
arranged their houses so as to maintain, in a subtle but unmistakable
way, their own identity. They formed in effect a second rectangle
which formed a harmonious continuation of the first rectangle but which
was separated by just half a chain. In 1966, the front and the back
half of Hohorita held separate feasts, each inviting a different
village. In 1967, the councillor made plans to clear the gap between
the two halves, remove the two old houses which emphasized the separation
and build new houses in the cleared area to join the rows together.

Around this time, the Sombou people began to establish themselves
in Hohorita, leaving their old village behind. I think it was they
[764] who filled the gap between the rows. The councillor had long been at
pains to close down the small villages of Sombou and Kakita and Sombou
[775] was finally persuaded after the death of an old migrant who had remained
a pagan. As he could not be buried in the Christian cemetery, and
people did not feel disposed to carry out the full involved ritual to
placate the ghost, they preferred to shift their village. (They thought
that pagan ghosts are far more dangerous than Christian ones.)

361 Hohorita, like most resettlement villages, lies along the main
368 road to Popondetta, 11 miles from Popondetta, seven miles from Saiho
hospital, three miles from the Higaturu Council chambers. The school,
conducted by the mission on Hohorita station, offers an education to
the end of Standard 3.

621 The two feasts held in 1966 were intended to introduce into
● 433 Hohorita the pigless era advocated by all councillors. I arrived a
434 month or two after the feasts and by that time two very small pigs had
appeared which were there for a special reason I have forgotten.
Sombou and Kakita still had a normal complement of pigs. Coffee was
[231] a somewhat bigger enterprise in Hohorita than at Sivepe. The trees
were much better looked after, and there were far more of them. Every
[245] man had his coffee garden and an income of $100 per annum from coffee
was normal. Young trees were also being planted at a much faster rate.
[166] Compared to Sivepe, there were very few wives whose husbands were
permanently away working. The reason for this was that there are a
number of plantations quite close to Hohorita and those who needed
to work to pay off bridewealth, etc., could do so without going too
far afield. Money to pay taxes and other regular outgoing expenses
464 would come from coffee. Men who were able to find skilled jobs,
167 clerical or professional work usually had their wives with them. An
important resource of Hohorita, not shared by Sivepe, is the avail-
ability of good jobs within a reasonable distance; the fact that Hohorita
families do not break up in the same way as Sivepe ones indicates that
such separation is probably economically motivated. It is necessary
for a young man to earn his trophies, so to speak, which in the modern
world means money, but if he can do it without a prolonged absence
from home, he prefers staying home.